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TIME TO ACT:

**AFRICAN CHILDREN IN
THE CLIMATE CHANGE
SPOTLIGHT**

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01

Introduction



On 6 July 2023, the planet reached the highest average daily temperature ever recorded: 17.23 °C.¹

In June 2023, global ocean surface temperatures were higher than any previous June on record.² These are just the last of several records reached in recent years, and they are expected to be surpassed as temperatures continue to rise. The latest report from the Intergovernmental Panel on Climate Change (IPCC) indicated in the decade 2011-2020, the global surface temperature was 1.1°C above the 1850-1900 average and that the scale of recent changes across the planet had been unprecedented. Crucially, in the same report, the IPCC said that “human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming.”³



The consequences of higher temperatures are complex and widespread and are rapidly producing substantial damage

and increasingly irreversible losses, in terrestrial, freshwater, cryospheric, and coastal and open ocean ecosystems.⁴ The adverse impact of climate change on the lives of people is equally significant, with accelerated losses and damage occurring around the globe. Rising temperatures and changes in precipitation are leading to the increasing frequency and intensity of extreme weather events such as heatwaves, droughts, floods, and severe storms, among other factors. These in turn expose millions of people to crop losses, food insecurity, water security⁵ and health-related shocks such as food-, vector-, and water-borne diseases.



Vulnerable communities are disproportionately affected.

Regions and communities with considerable development constraints are highly vulnerable to climatic stress and shocks. In fact, the changing climate is closely connected to shocks that can have a devastating impact on low-

income households and communities. In addition to their high vulnerability to climate change-related shocks, the poorer segments of the population generally have fewer resources to react to these disruptions. They often lack a supportive external environment to prevent, cope with, and adapt to climate shocks, including limited access to basic services such as social protection, public goods, and adequate public policy. In response to climate and environmental shocks, families and communities living in poverty are often forced to resort to negative coping strategies that can jeopardize their long-term wellbeing, perpetuating the cycle of poverty and vulnerability.



Children are more vulnerable than adults to the effects of climate and environmental shocks and stressors.

They are physically less able to withstand shocks such as floods, droughts, severe weather, and heatwaves, and are physiologically more vulnerable to toxic substances, such as lead and other forms of pollution.⁶ They are more at risk of death, compared to adults, from diseases that are likely to be exacerbated by climate change, such as malaria and dengue. Children have their whole lives ahead of them and any deprivation as a result of climate and environmental degradation at a young age can have negative consequences throughout a child's lifetime.



Some children, who are the most vulnerable, bear the greatest burden.

For example, while climate change impacts agricultural systems globally, the effects are most acute where the main source of income relies on the natural environment. This is the case where families spend the majority of their income on food, and where the nutritional status of children is insufficient to withstand changes in the price and quality of food.

Similarly, while climate change affects the health of children all around the world the effects are most acute where disease vectors become more prevalent and widespread, and where health systems are not capable of adequately protecting children from these shocks.⁷



Temperatures will continue rising in the coming years and the impact of climate change will inevitably worsen.

An analysis of the Nationally Determined Contributions (NDC) – countries' self-defined national climate pledges under the Paris Agreement – indicates that global greenhouse gas (GHG) emissions are not decreasing fast enough to avoid that the global temperature increases. Furthermore, even if global GHG emissions were to decrease faster, it would take two to three decades to see a reduction in global temperatures. With further increases in temperatures, every region should prepare to experience concurrent and multiple adverse effects of changing climates. Heatwaves and droughts are projected to become more frequent,⁸ tropical cyclones and/or extratropical storms will intensify as will aridity and fire weather.⁹ Climatic and non-climatic risks are expected to increasingly interact, creating cascading risks that are more complex and difficult to manage.



Africa, historically the inhabited continent of the world that has contributed the least to global carbon emissions, is disproportionately affected by the consequences of climate change.

People across the continent are already experiencing the devastating effects resulting from the slow onset changes in temperature and increased natural hazards. Climate-related shocks and stresses are a major hindrance to inclusive growth and poverty reduction in Africa. It is estimated¹⁰ that in Sub-Saharan Africa (SSA) alone, the loss in gross domestic product (GDP) deriving from a 3°C global warming by 2100 is

US\$2,890 billion with SSA's GDP reducing by as much as 8.6 per cent per year after 2100. If limited to 1.5°C (in line with the Paris Agreement), the expected decline in GDP would be considerably lower at 3.8 per cent per year after 2100.



→ **This report presents a synthesized analysis that sheds light on the multifaceted exposure and vulnerability to climate change of children living in the African continent.**

Using the data and conceptual framework of the global Children's Climate Risk Index (CCRI),¹¹ the report provides an understanding of the way in which children are *specifically* exposed and vulnerable to the effects of climate change. The report also highlights recent findings on the very limited focus of international climate funding on children,

→ **This report is also a call for urgent action** that can effectively respond to the challenges that climate change has on the realization of children's rights in Africa. It is a call addressed to governments, intergovernmental institutions, the private sector and other key stakeholders to urgently scale-up their investment in adaptation and resilience of social services as well as to include children and young people in climate adaptation and resilience-building plans.

→ **Finally, this report aims at showcasing specific interventions and solutions** that, mostly through adaptation and resilience-building, have been shown to be effective tools to mitigate the immediate and expected impact of climate change on children, their families, and communities, particularly the most vulnerable and marginalized.

02

The Children's Climate Risk Index

The Children's Climate Risk Index (CCRI) is a composite index based on a multi-shock model that measures children's exposure and vulnerability to climate and environmental-related risks. Adopting the IPCC risk framework (IPCC 2014), the CCRI considers risks as being composed of the key domains of hazards, exposure to identified hazards and vulnerability, where vulnerability has the components of both sensitivity (immediate impact of hazard) and adaptive capacity (ability to respond in the longer term). The indicators that make up the index reflect these categories and, more specifically, reflect them in relation to the risks faced by children.¹²

The adaptive capacity of children is measured along four components related to access to water, sanitation and hygiene (WASH), education, health and nutrition, and social protection. The CCRI uses updated hydrological and coastal flood risk data from the World Resource Institute, which allows the measurement of exposure to shocks and stresses with a higher resolution. The CCRI goes beyond climate-related hazards by also including broader environmental shocks and stresses that have a direct impact on children's wellbeing, such as air pollution.

The CCRI is a tool designed to provide decision makers with a better understanding of the type and scale of hazards, shocks or stresses faced by children as well as the extent to which children have access to climate-resilient essential services that can reduce their vulnerability to climate-related risks. The CCRI

is calculated based on a set of indicators across two pillars:

- **Pillar 1:** Measures the **exposure** of children to climate and environmental hazards, shocks, and stresses, and reflects the likelihood that the child population is exposed to climate and environmental shocks or stresses. This pillar includes eight components aggregated with a geometric average.
- **Pillar 2:** Measures children's **vulnerability** to the negative effects of climate and environmental hazards, shocks, and stresses. This pillar comprises four components that measure the capacity and readiness of communities and systems to deliver services that are essential for the wellbeing of children.

Figure 1 provides a list, by pillar, of the components of the two CCRI pillars. Each of these 12 components is calculated based on a number of indicators where data values are combined to determine a CCRI score for each individual component. Across the two pillars, the CCRI uses 57 indicators to measure children's overall risk related to climate change.

The adaptive capacity of children is measured along four components related to access to; Water, Sanitation and Hygiene (WASH), education, health & nutrition, and social protection.

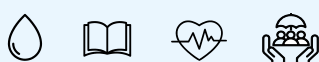
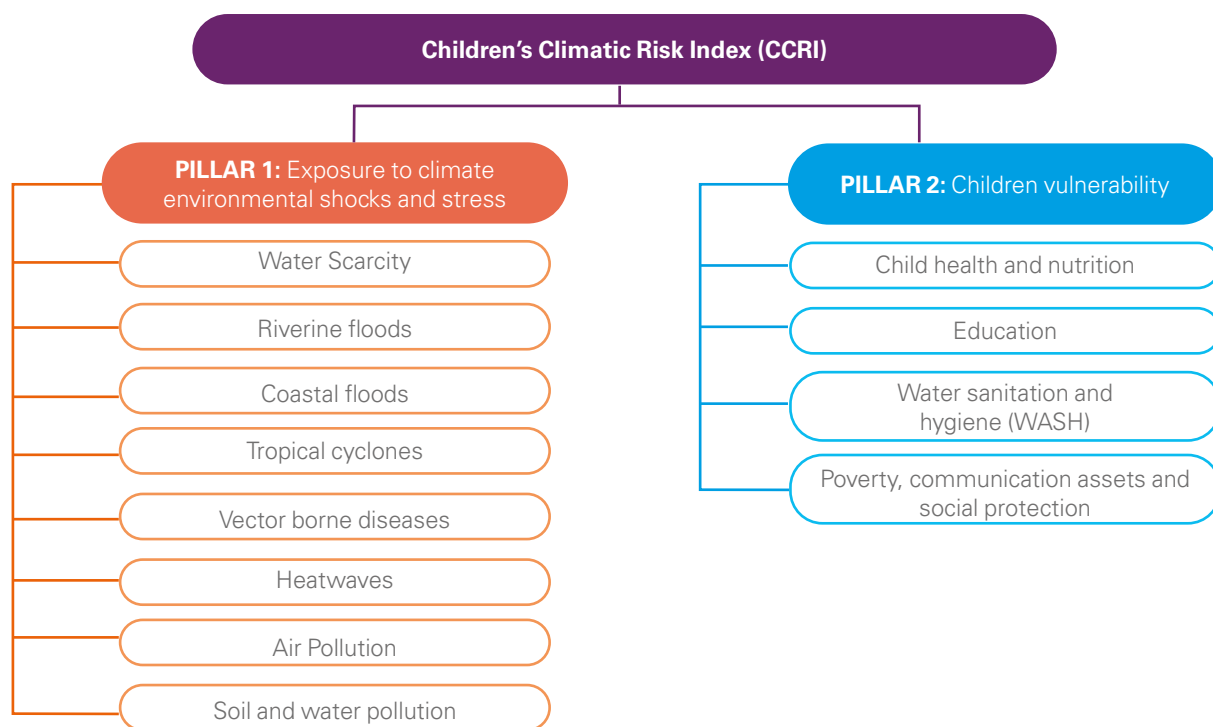


FIGURE 1
Children Climate Risk Index (CCRI) pillars and relative components



All results presented by the CCRI model are indices. Each country has an index score that varies between 0 and 10 on each of the components of the two pillars, as well as on each of the pillars themselves. Finally, the scores in the two pillars combined give the full CCRI score for a country.

All the CCRI scores are categorised into five classes of risks according to the colour-coded scales presented in Figure 2.

FIGURE 2
CCRI risk classes: Limits at the level of the climate change risk index and pillars

RISK INDEX AND PILLARS	CLASS	MIN	MAX
Children's Climate and Environment Risk Index	Extremely high	7.1	10.0
	High	5.5	7.0
	Medium high	3.8	5.4
	Low medium	2.1	3.7
	Low	0.0	2.0
PILLAR 1: Exposure to climate and environmental shocks	Extremely high	7.1	10.0
	High	5.5	7.0
	Medium high	3.8	5.4
	Low medium	2.1	3.7
	Low	0.0	2.0
PILLAR 2: Child vulnerability	Extremely high	7.1	10.0
	High	5.5	7.0
	Medium high	3.8	5.4
	Low medium	2.1	3.7
	Low	0.0	2.0

03

Children's Exposure to Climate and Environmental Hazards

This section of the report focuses on Pillar 1 of the CCRI. It outlines how countries on the African continent fare in relation to each of the eight climate and environmental-related risk factors to which children can be exposed. It also sheds light on the specific ways in which children are uniquely affected by such exposure to climate and environmental-related risks.

Water scarcity

Water scarcity is defined as a situation in which the demand for water exceeds the supply and where available water resources are approaching or have exceeded sustainable limits.¹³ Water scarcity can result from multiple factors, including overextraction of ground water and contamination of freshwater supplies. Climate change can exacerbate water scarcity and increase the frequency and intensity of droughts, including through decreases in precipitation and increased evaporation resulting from higher temperatures. At the same time, higher temperatures also lead to higher demand for water.

Water scarcity and droughts are a leading threat to food security and can have devastating effects on

livelihoods in low-income communities, including through income drops due to crop failure and livestock death. Water scarcity limits access to safe water for drinking and for practicing basic hygiene at home, in schools and in healthcare facilities. This can force communities, including children, to rely on unsafe water sources, increasing the risks of contracting waterborne diseases such as diarrhoeal disease¹⁴ that are a key contributor to stunting.

When water resources are scarce, competition can elevate tensions and lead to conflict and migration. Tensions can be further exacerbated as large influxes of displaced people move in with host communities and create additional demands on water supply.

In Africa, an estimated 182 million children are exposed to water scarcity.¹⁵ Climate change is further increasing the continent's exposure to this hazard. Historic data show that relative to 1970–79, the frequency of droughts in SSA nearly tripled in the decade 2010–19.¹⁶ Stunting already affects almost one in three (32 per cent)¹⁷ of children under 5 years of age living in SSA and has a long-term, often irreversible negative impact on their physical and mental development.¹⁸



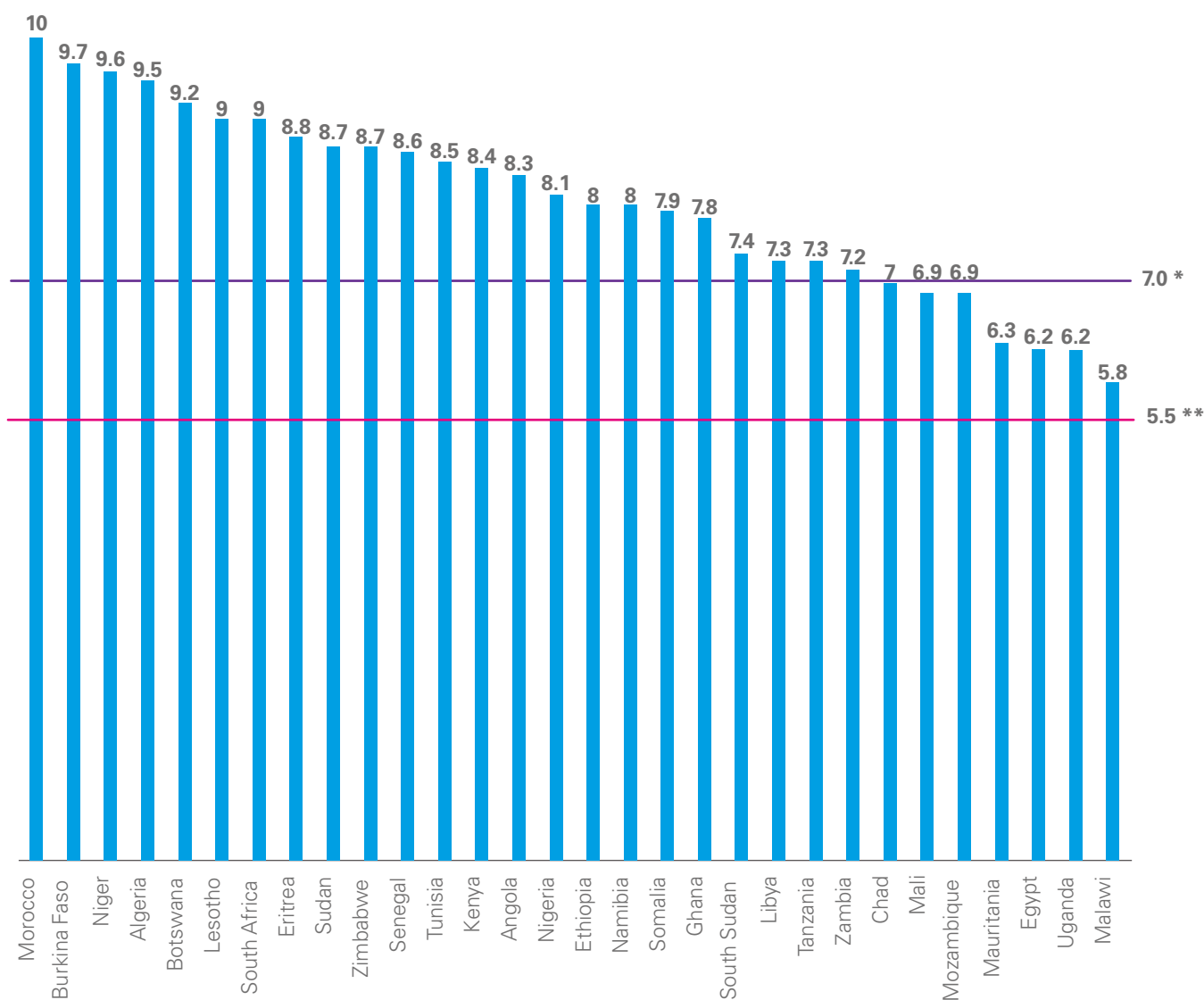
The long-term challenges Africa has faced in terms of limited access to WASH services and the burden of WASH-related diseases among children under 5 are now compounded with the increasing fragility determined by climate and environmental threats resulting in a deadly triple burden of WASH-related threats. Some two in every five deaths occurring globally from unsafe WASH services are concentrated in just 10 SSA countries with a combined population of 190 million children.¹⁹

As many as 33 of the 49 African countries featured in the CCRI dataset²⁰ post a CCRI score for water

scarcity that is above the 7 out of 10 threshold, indicating that children’s exposure to water scarcity in these countries is “extremely high” while an additional seven countries have a “high” level of exposure (i.e., a score between 5.5 and 7).

The countries in which children are most severely affected by water scarcity are located in the northwestern region of the continent (Morocco, Burkina Faso, Niger and Algeria) and in the southeast (Botswana, Lesotho, South Africa). All of these countries have an exposure score to water scarcity of 9 out of 10 or higher.

FIGURE 3
African countries with a water scarcity index score that is either ‘high’ or ‘extremely high’



* Lower threshold of the ‘extremely high’ risk index score (7.0).

** Lower threshold for the “high” risk index score (5.5).

Riverine floods

Floods can occur when rivers carry extremely high flows of water from surrounding or even distant regions or can arise locally within built-up areas from debris blocking water streams. Flash flooding can occur within minutes or a few hours after a period of excessive rainfall. Riverine flood exposure is increasing with more extreme weather patterns caused by climate change, including higher levels of precipitations as well as more frequent and intense storms or cyclones.

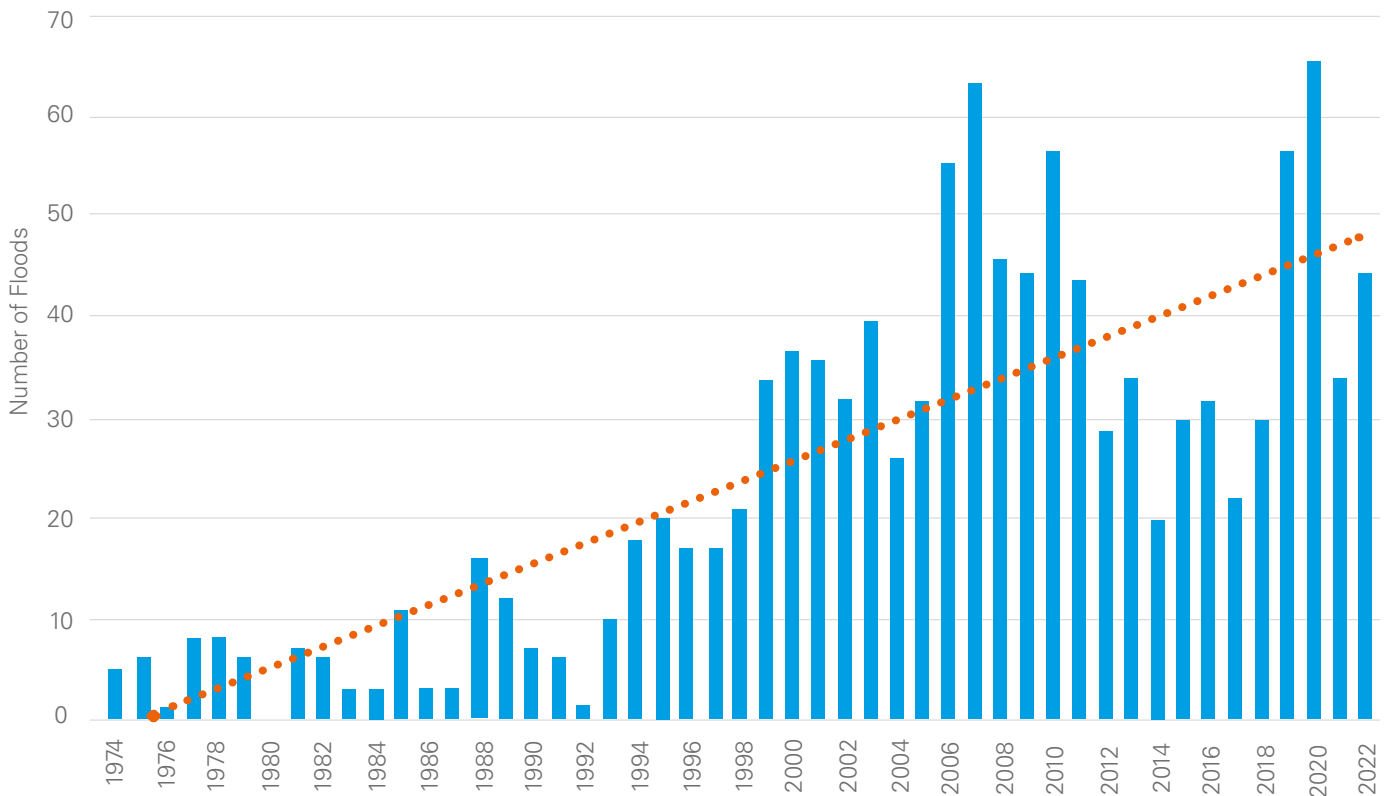
Children are especially vulnerable to flash floods because of the quick onset of these floods and their destructive nature. Floods often move at high speeds, leaving children and their families with little warning to prepare and respond. Flash floods can also have devastating consequences on critical infrastructure, causing immense damage to schools and health facilities, as well as triggering secondary hazards such as landslides.

Many children lack sufficient physical strength to stay on their feet when currents are fast, especially

in shallow water, and strong currents and debris in the water put them at risk of injuries and drowning. Damage to housing can also endanger children’s wellbeing, particularly if emergency shelter is either scarce or inadequate.²¹ Flooding also poses public health risks, as it can contaminate water sources and compromise safe water supplies, greatly increasing the risk of waterborne diseases. These instances are particularly dangerous for the vulnerable segments of the population, children especially, as disease outbreaks can result in increases in child morbidity and mortality.²²

In Africa, most rural settlements in riverine or coastal wetlands are at risk of flooding. In urban areas, inadequate drainage puts thousands at risk of flooding from frequent, short duration but high intensity, rains.²³ The number of flooding events in Africa has substantially increased over the last 50 years. Figure 4 provides a visual representation of the magnitude of this increase. The average number of floods per decade in the 2020s is 48 compared to a much lower six in the 1970s and 80s.²⁴

FIGURE 4
Number of floodings recorded in Africa per year, excluding coastal flooding*.



*Data excludes floodings from sea waters.

In Africa, an estimated 52 million children are exposed to the risk of riverine flooding.²⁵ The countries with the highest risks for children are in West Africa and Central Africa (WCA) regions, i.e., Chad (9.3), Liberia (9.1) and Nigeria (8.6). More generally, a total of 12 of the continent’s countries fall in the “extremely high” risk category of the CCRI for riverine floodings. All of them are in the WCA and in the Eastern and Southern (ESA) regions, while all countries in the North Africa region having a risk score in the medium to low category.

Coastal floods

People living in proximity to the coast are exposed to the risk of sea water flooding the land where they live and work. Climate change has heightened this risk due to the increasing frequency of severe weather and, also, as higher temperatures cause thermal expansion of water, enhancing coastal flood risk. In recent decades, the rate of sea level rise has been increasing: between 2006 and 2015, sea levels

rose on average by 3.6 mm per year globally.²⁶ Due to sea level rises, current 1-in-100-year extreme sea level events are projected to occur at least annually in more than half of all tide gauge locations by 2100 under all considered scenarios.²⁷

Along the 30,000 km long coastline of the African continent, many inhabited areas are at high risk of sea flooding. An estimated 32 million children live in these areas.²⁸ Eleven of the continent’s countries have a CCRI score against the risk of coastal flooding that puts them in the “extremely high” risk category (i.e., above 7 out of 10). Highly populated coastal areas such as those along the Gulf of Guinea, the Nile Delta and the Mozambique Channel are the regions of the continent where the risk of coastal flooding is the highest for communities and children (Figure 5). The Nile Delta region, in particular, has a considerable level of exposure due its high population density and because of the fact that large areas are below sea level and are exposed to flooding from the Mediterranean Sea.²⁹

FIGURE 5

Countries where children are exposed to an ‘extremely high’ risk related coastal floodings as per the CCRI scores in this component.



Tropical cyclones

Cyclones are rapidly rotating low-pressure storms which form over tropical or subtropical oceans. Cyclones can cause flooding, storm surges and extreme winds. While the relationship between climate change and cyclone frequency is complex, with some scientists projecting a decrease in frequency, there is agreement that warmer ocean temperatures and rising sea levels are likely to increase the frequency of high-intensity cyclones.³⁰

Based on the CCRI data, Madagascar and Mozambique are the two countries where children are more directly exposed to the risk related to tropical cyclones. In these countries, based on historical data, some 19 million children face high risk of being directly exposed to tropical storms with winds exceeding 100 km per hour³¹.

Tropical cyclone Idai is among the latest devastating cyclone that hit the continent, making landfall in central Mozambique in March 2019. It caused substantial damage and loss in Mozambique and Zimbabwe with the associated flooding in these countries affecting nearly 1 million people. In Mozambique, Idai left around 1.3 million children in need of urgent humanitarian assistance³² and damaged and estimated 715 thousand hectares of crops, depriving many families of their main source of income. The damage caused by the cyclone was estimated to exceed US\$1.4 billion³³ in Mozambique.

Vector-borne diseases

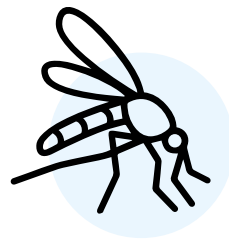
Changes in temperature, precipitation patterns and humidity favour the spread of vector-borne diseases such as malaria, dengue, Zika virus, encephalitis, hantavirus, and Rift Valley fever. Changing habitats for vector species such as rodents, mosquitos and ticks increase disease transmission rates that can cause increased morbidity and mortality among exposed children.

Countries in Africa have made important progress in reducing the prevalence of vector-borne diseases such as malaria with a decreasing number of child deaths due to these diseases.³⁴ Despite this progress, malaria remains a leading cause of death

among children under 5 years in Africa and its prevalence is expected to increase due to climate change.

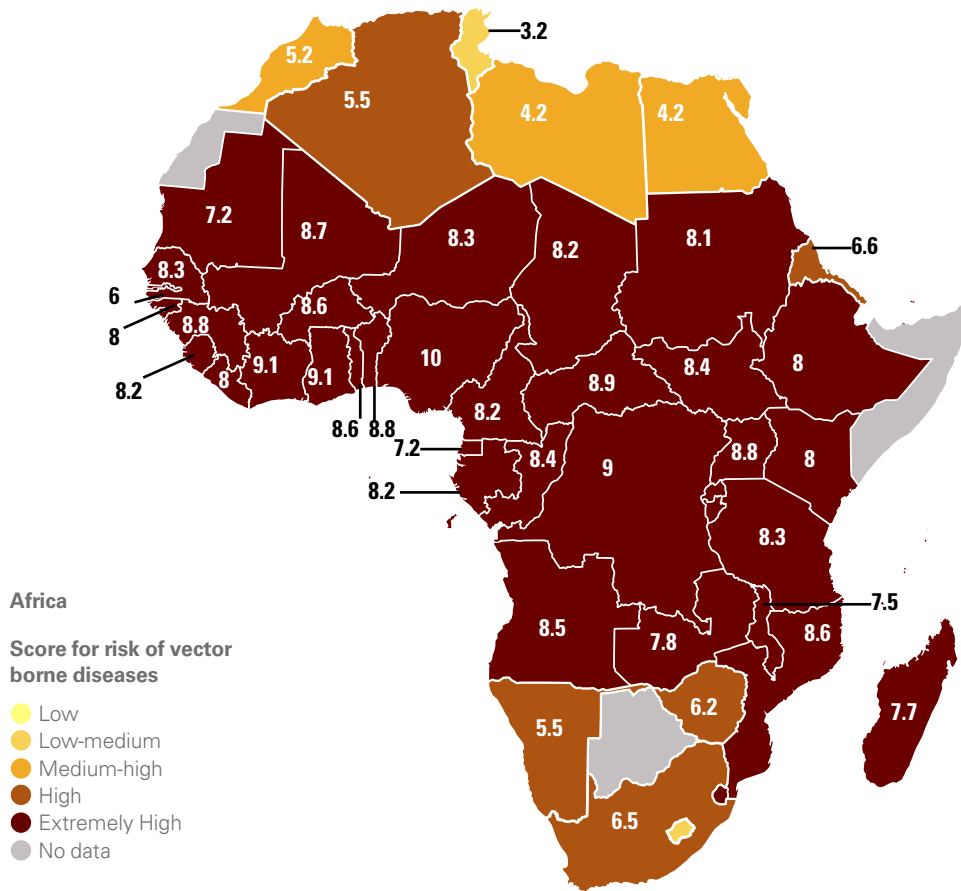
Warmer temperatures also increase bite rates and transmission. Moreover, rising temperatures are associated with higher mosquito proliferation, faster mosquito oviposition cycles and egg laying, and alterations in mosquito feeding habits. With increasing temperatures and shifting agro-ecological zones, the geographic prevalence of many of these diseases is spreading to higher altitudes. For example, tropical highland zones such as in Eastern Africa, are likely to see higher rates of malaria transmission as temperatures rise. This makes populations, which may have not yet adopted practices to protect themselves and their children from malaria, particularly vulnerable.³⁵

According to the CCRI index, children in 35 countries in Africa are exposed to an “extremely high” risk of vector-borne diseases with index scores for this component above 7. In 12 countries, the risk score is “high” or “medium-high” with scores above 5.5. Among the 49 countries for which data is available, only Tunisia and Lesotho fall in the “low risk” group.



Malaria remains a leading **cause of death** among children under **5 years of age** in Africa and its prevalence is expected to increase due to climate change.

FIGURE 6
 CCRI scores against the risk of vector borne diseases for countries in Africa.



Heatwaves

The increase in temperatures around the globe has resulted in higher frequency and intensity of heatwaves. Heatwaves can have severe consequences on people’s health, particularly for children. While it is difficult to calculate the number of fatalities attributable to heatwaves, available estimates indicate that more than 166,000 people died from heatwaves between 1998-2017.³⁶ The impact on economic activity and livelihoods of people and communities, is also substantial. Available evidence indicates that a 1°C increase in temperature in low-income countries is associated with a decline in agricultural output of 2.7 percentage points.³⁷

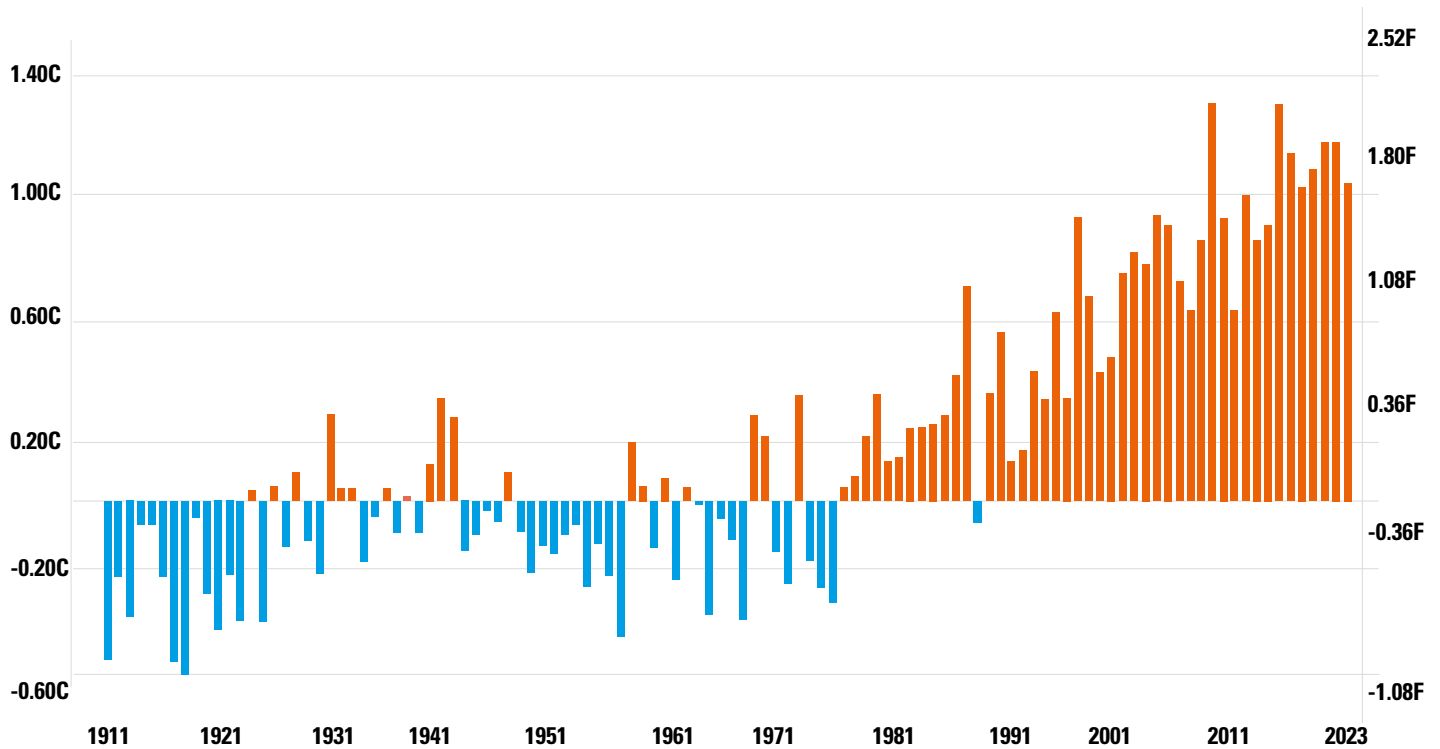
The effect of heatwaves has been exacerbated in urban areas due to the urban “heat island” effect. However, even in rural areas livelihoods and wellbeing of communities can also be severely affected due to unusually hot temperatures. Higher temperatures also contribute to increased evapotranspiration that in turn increases the risk of water scarcity.

Across Africa, the annual temperature averages have increased at an average rate of 0.13°C per decade since 1910. However, the pace of warming has more than doubled to 0.30°C since 1981.³⁸ Long-term forecasts predict that extensive areas in Africa will exceed 2°C of warming by the last two decades of the 21st century under medium scenarios.³⁹ Figure 7 shows the historical record of anomalies in temperature averages in the continent.⁴⁰

An estimated 241 million children in Africa live in areas that are highly exposed to heatwaves.⁴¹ As many as 27 of the 49 African countries, for which data is available, have a CCRI score for heatwaves that are above the 7 out of 10 threshold. This indicates that children’s exposure to this hazard in these countries is “extremely high” while in eight additional countries the index score is between 5.5 and 7, indicating “high” level of exposure to the heatwaves.

FIGURE 7

June - May Temperature Anomalies in Africa, 1911-2023.



Air pollution⁴²

Air pollution is a risk factor for health, particularly for children and the elderly. It is associated with respiratory infections such as pneumonia which are among the leading causes of child morbidity and mortality in developing countries..

Children are especially vulnerable to polluted air as their lungs and their immune systems are not fully developed, and their airways are smaller than adult airways. Infections are more likely to cause blockages than in adults. Exposure to air pollution during childhood can harm the healthy functioning of children's lungs, with lifelong implications.⁴³

In Africa, rapid urbanization and industrialization bring new challenges with air pollution, driven by the burning of fossil fuel, contributing to premature deaths. In 2019, ambient air pollution was responsible for an estimated 383,419 premature deaths across Africa.⁴⁴ An estimated 320 million children are exposed to air with a concentration of particular matter (PM) above $25 \mu\text{g}/\text{m}^3$ ⁴⁵ - a value that is five times the limit of established air quality standards for PM_{2.5}.⁴⁶

As many as 34 of the 49 countries in Africa for which data is available have a CCRI score for air pollution above the 7 out of 10 threshold, indicating that children's exposure in these countries is "extremely high". An additional eight countries have level of exposure that are either "high" or "medium-high" (Figure 8). The eastern and southern parts of Africa fare relatively better than the rest of the continent with levels of exposure that go from "medium-high" to "low-medium". Madagascar is the only country on the continent with an overall score that falls in the "low risk" for air pollution.

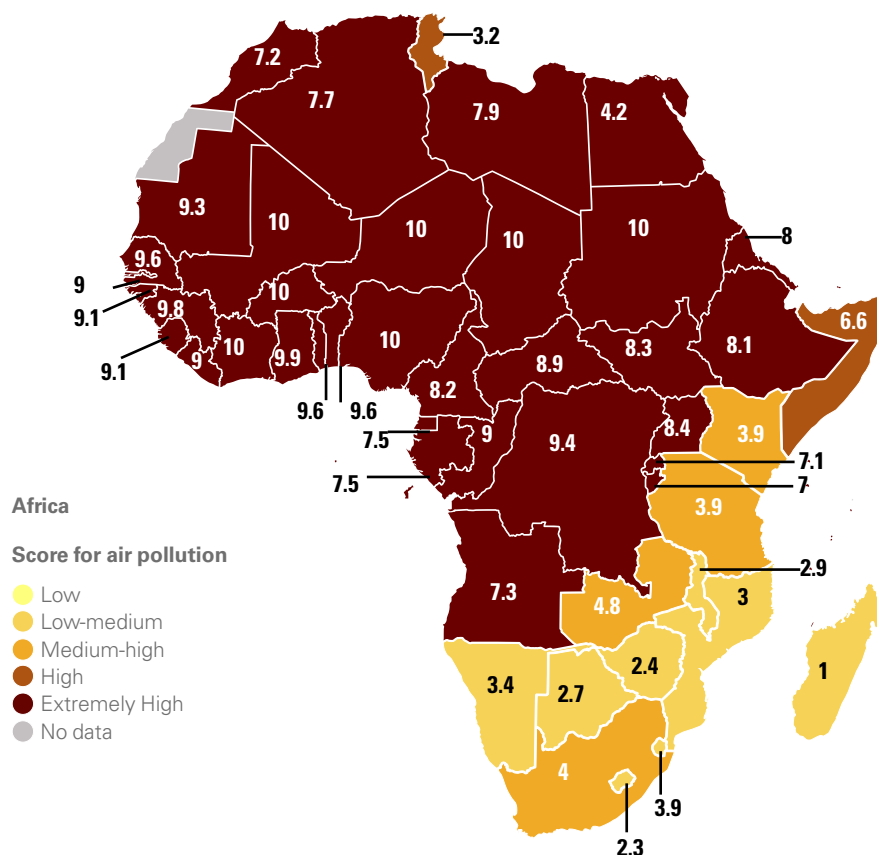


Soil and water pollution

The presence of toxic chemicals and heavy metals threaten children's health and cognitive development, in addition to destroying ecosystems that are critical to a healthy environment. Pesticides can often be found in soil and water and are a major health hazard.

Children's skin, eyes, nervous systems, cardiovascular systems, gastrointestinal tracts, livers, kidneys, reproductive systems, endocrine systems, blood and immune systems can be negatively affected by the exposure to pesticides.

FIGURE 8
CCRI scores against the air pollution in African countries.



Child-specific behaviours, such as breastfeeding, crawling, and hand-to-mouth behaviour, expose children disproportionately to toxic chemicals and pollutants. Children have a greater intake of air, water, and food per kilogram of body weight than adults, and their detoxification mechanisms are not fully in place.⁴⁷ In addition, the exposure to pesticides has been linked with cancer and developmental delays. Child exposure can, however, be significantly reduced by the proper management of chemicals.

More than 260 million children on the African continent are estimated to have an elevated level of lead in their blood (i.e., above 5 µg/dL) due to exposure to this pollutant in the environments where they live.⁴⁸ Even with low level exposure, lead is a potent neurotoxin associated with reductions in IQ scores, shortened attention spans, and can lead to potentially violent and even criminal behaviour later in life. The impact of lead is not limited to children. It is estimated that globally over 900,000 premature deaths per year can be attributed to lead exposure.⁴⁹

An estimated 211 million children in Africa live in areas with high pesticide pollution. In Nigeria alone, the number of children exposed to this risk is estimated at 92 million (Figure 9) while Egypt records the second highest number of at-risk children with 34 million. These two countries, in addition to being among the most populated on the continent, also record the highest percentage of children exposed.



An estimated **211 million children** in Africa live in areas with high pesticide pollution with Nigeria alone having an estimated **92 million** children exposed to this risk.

FIGURE 9

African countries with the highest number of children living in areas with high pesticide pollution risk and percentage relative to all children living in the countries

Country	Number of children (in millions)	% of total children in the country
Nigeria	92.1	89%
Egypt	34.1	88%
Rwanda	5.2	87%
Benin	4.6	77%
Morocco	7.7	68%
Sierra Leone	2.2	66%
Algeria	8.6	58%
D.R. of the Congo	26.5	56%
Liberia	1.2	51%



04

African Children's Vulnerability to Climate and Environmental Hazards

The previous section of this report provided an overview of the main climate and environmental-related stresses and shocks to which children are *exposed*, that together constitute Pillar 1 of the CCRI.

While all children have a degree of exposure to at least some of these stresses and shocks, the extent to which they are vulnerable to such exposure depends greatly on whether they have access to good quality essential services such as water, sanitation, hygiene, health, nutrition, social protection, and education. Children who have adequate access to these essential services are in a better position to cope with the adverse effects of these stresses and shocks. Pillar 2 of the CCRI focuses and captures performance of countries in relation to children's access to these essential services. This chapter of the report provides a summary of how African countries perform against the four components of the CCRI Pillar 2.⁵⁰

Inadequate child health and nutrition

The impact of climate-related shocks and stresses on households and communities that have no, or limited access, to good quality health and nutrition services can lead to substantially diminished health and nutrition outcomes. This can occur through multiple mechanisms. For example, it can occur through a higher risk of disease, or due to a lack of emergency medical supplies, that makes healthcare inadequate to the challenges brought about by climate-induced shocks.

Children with poor health and nutritional status are significantly more vulnerable to climate change-related shocks and stresses. For example, children who suffer from acute malnutrition are more vulnerable to infections and vector-borne diseases such as malaria and dengue, which have recurrence and frequency rates that can increase from the effects of climate change.⁵¹

To compound the problem, institutions and systems providing health and nutrition services experience even greater strains on resources due to the increased demand of services caused by the impact of climate change. In such circumstances, an effective response can be further constrained by limited preparedness of health and nutrition systems, including limited prepositioned supplies, workforces lacking specific training and limited coordination mechanisms.

On the African continent, notwithstanding large disparities across countries, overall access to health and nutrition services remains a challenge. Despite substantial progress in many countries, healthcare interventions often do not reach the areas and people that need them the most. Inequitable access to critical health services places children, newborns, and adolescents at risk.

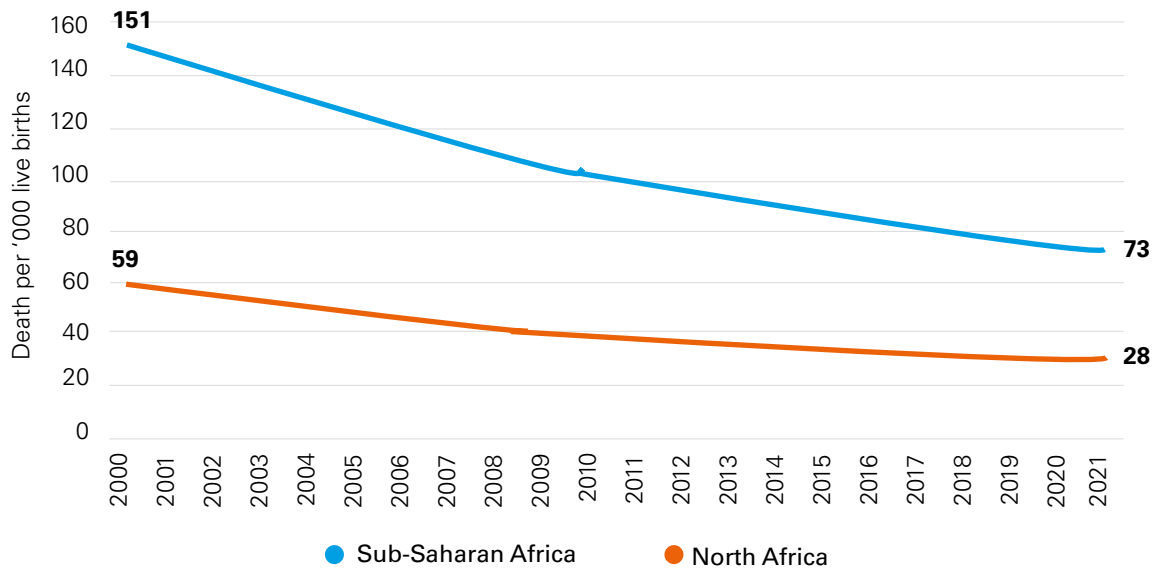
While child mortality has decreased tremendously over the last decades in the different regions of the continent, (Figure 10)⁵², it remains high, with many children dying from preventable and treatable conditions. Globally, SSA remains the region with the highest levels of child mortality, with countries such as Chad, Somalia, Guinea and the Central Africa Republic posting mortality rates among the highest in the world. In the year 2021 alone, an estimated 1.8 million children aged 1-59 months died in SSA.⁵³

Severe shortages of health workers is one of the key factors undermining access to and provision of health and nutrition services, even though countries in the region have made efforts to bolster the workforces. According to a recent study⁵⁴ Africa has a ratio of 1.55 health workers (physicians, nurses and midwives) per 1,000 people, well below the WHO threshold of 4.45 health workers per 1,000 people.

Health workforces are also unevenly distributed by country, ranging from 0.25 health workers per 1,000 people in Niger, with just four countries (Mauritius, Namibia, Seychelles, and South Africa) above the WHO health worker-to-population threshold.

FIGURE 10

Under-five mortality rate in the Sub-Saharan and Northern Africa regions, years 2000-2021 (deaths per thousand live births)



Africa's challenges with human resources in health stem from several factors, including inadequate training capacity, migration, weak governance of the health workforce, as well as poor retention of health personnel. It is projected that the shortage of health workers in Africa will reach 6.1 million units by 2030, a 45 per cent increase from 2013. Public funding to healthcare also remains insufficient and a crucial constraint on progress.⁵⁵

Furthermore, in many African countries, health systems and governance structures are weak and fragmented. Lack of coordination among institutions, inadequate regulatory frameworks, and limited planning and implementation capacity hinder the efficiency and effectiveness of health and nutrition service delivery.

Malnutrition is a major challenge and a key determinant of child mortality and morbidity across the continent, although to varying degrees in the different regions. The WCA and the East and Central Africa regions are the most affected, with almost one in every three children under 5 years (32 per cent) suffering from acute malnutrition.⁵⁶ The poor quality of children's diets is a key driver of stunting and other forms of malnutrition, including wasting, micronutrient deficiency, and being overweight.

The proportion of children who are overweight and obese is also on the rise across the continent, and it is now estimated that 1 in 10 children and adolescents are obese, with 10 high-burden

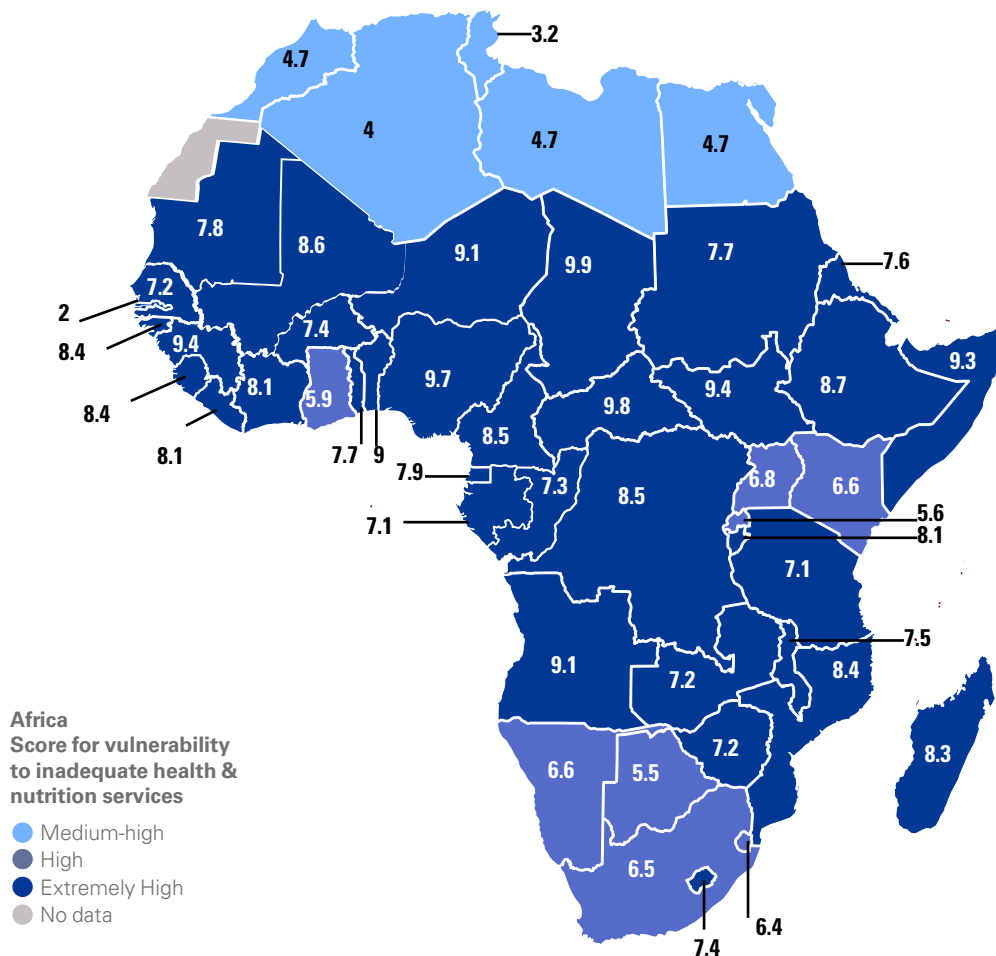
countries posting child and teenager obesity prevalence between 14 per cent and 31 per cent.⁵⁷

The CCRI data on child vulnerability due to inadequate health and nutrition services show that (Figure 11) in Africa, 36 countries rank in the "extremely high" vulnerability class with a CCRI score for this component above 7 out of 10. Eight countries have "high vulnerability" (score of 5.5 and above), while four countries have medium-high vulnerability. Among the 49 countries for which data is available, only one country, Tunisia, falls in low vulnerability class for this component.



It is projected that the shortage of health workers in Africa will reach **6.1 million** units by 2030, a **45% increase** from 2013.

FIGURE 11
CCRI score by country in Africa for the ‘Inadequate health and nutrition’ component



Inadequate water, sanitation and hygiene

Access to safe water, sanitation, and hygiene (WASH) together with the availability of effective drainage and sewage systems, substantially increases community resilience to the negative effects of climate change. A lack of safe drinking water, sanitation and hygiene is destructive in all aspects of a child’s life, as it jeopardizes their ability to realize fundamental needs including adequate levels of nutrition, health, education, and safety.

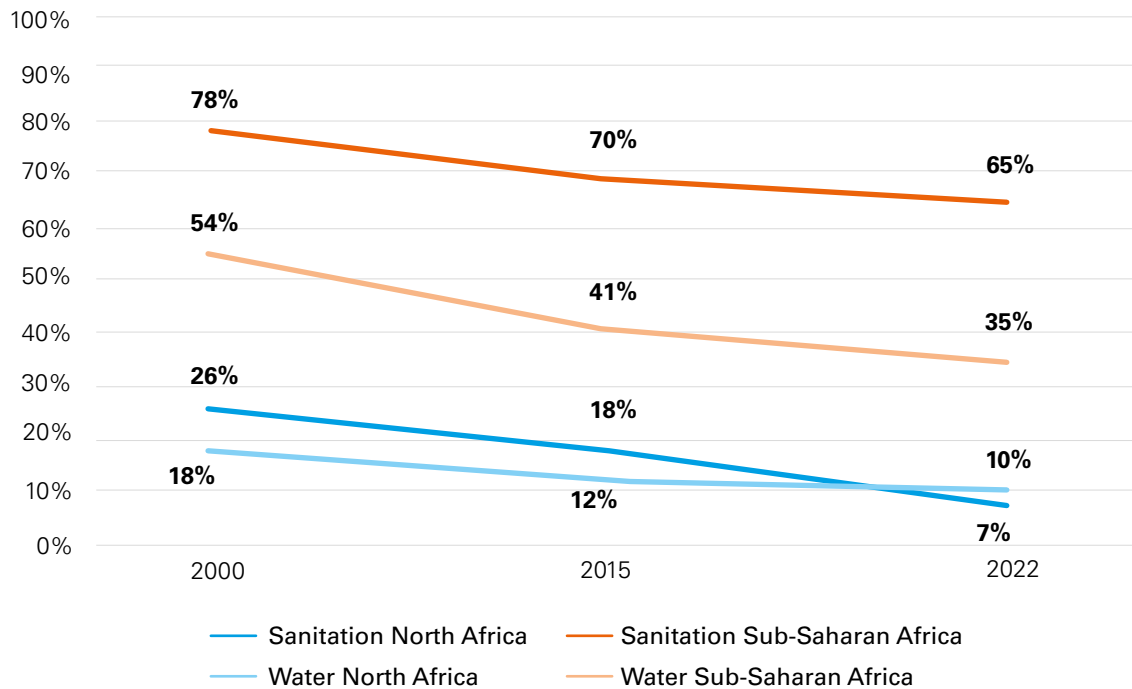
Climate change also exacerbates the spread of vector-borne and water-related diseases which are among the most common causes of child death on the continent, such as diarrhoeal diseases. Children with access to adequate WASH have an enhanced capacity to respond to and treat these diseases. Furthermore, the practice of effective sanitation and hygiene behaviours such as frequent handwashing with soap is critical to preventing transmission of

diseases to the individual as well as outbreaks in the community. Adequate availability of drainage and sewage facilities is also critical as it decreases susceptibility to climate-related floods that can lead to the contamination of local water resources.

Over the last two decades, most countries in Africa have made tangible improvements towards providing their population better access to safe WASH. In SSA, the percentage of people without access to basic drinking water supply⁵⁸ decreased from 54 per cent in the year 2000 to 35 per cent in 2022⁵⁹ while in the same period, countries in North Africa recorded a decrease from 18 per cent to 10 per cent. The percentage of people without access to basic sanitation⁶⁰ also fell across the continent, from 78 per cent to 65 in SSA and from 26 per cent to 7 per cent in North Africa (Figure 12)⁶¹.

FIGURE 12

Percentage of households without access to basic water and sanitation services, Sub-Saharan Africa and North Africa



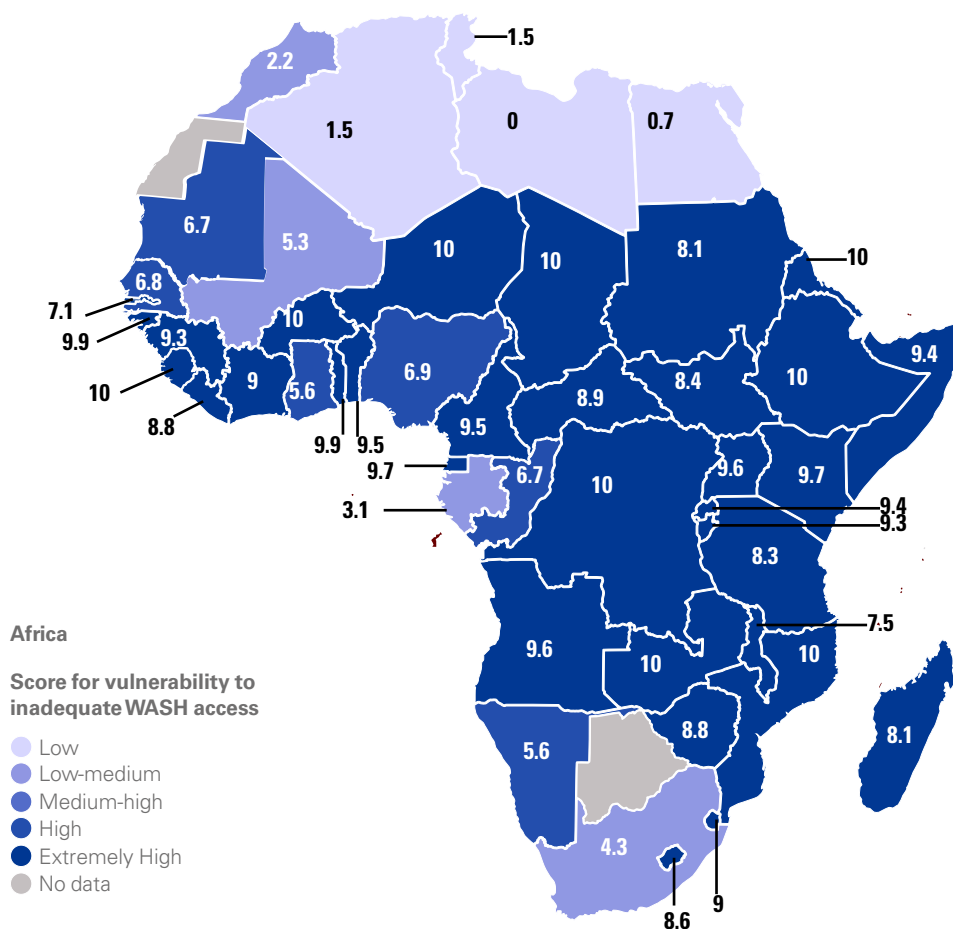
Despite this progress, vast areas of the continent remain the most deprived of WASH services anywhere on the planet. A recent publication⁶² found that two out of five deaths attributable to unsafe WASH services worldwide are concentrated in 10 SSA countries (Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger, Nigeria, and Somalia). All these countries rank in the top 25 per cent in the CCRI exposure (i.e., Pillar 1) and are a reminder of the correlation between the effects of climate change and the deprivation of child rights.

Efforts and progress in providing safe WASH services by governments to their populations are today faced with new climate change-related challenges. Events that are triggered or exacerbated by climate change make the provision of WASH services more urgent and more challenging. For example, flooding leads to water contamination as flooded latrines and septic tanks can contaminate water supplies, making the water unsafe. Furthermore, climate-related shocks, including severe storms and cyclones, can damage or destroy water and sanitation infrastructure.

To face these challenges, countries and communities are required to enhance the resiliency of WASH systems and services to better withstand climate-related events. Climate-resilient WASH services increase the adaptive capacities of communities to climate change. Since vulnerable communities are exponentially more exposed to the effects of climate change, the focus of WASH and climate adaptation policies and programmes needs to be on the poorest and most vulnerable communities, including children, women, and displaced populations.

An analysis of the CCRI scores by country shows how children living in tropical countries tend to have the highest level of vulnerability to climate change due to inadequate access to safe WASH (Figure 13). A total of 33 countries have a CCRI score for this component above 7 out of 10, meaning children face "extremely high" levels of vulnerability because of inadequate WASH services. Children living in North African countries have generally much better access to safe WASH services. Countries in the south and in the west also fare better compared to those in tropical areas.

FIGURE 13
CCRI score by country in Africa for the 'Inadequate access to water, sanitation and hygiene component'



Inadequate education and learning

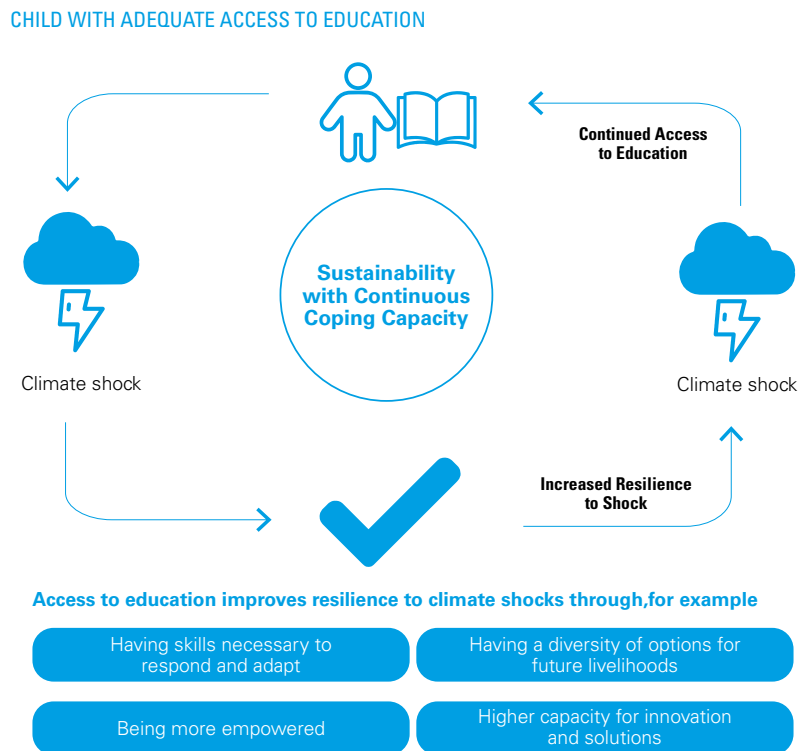
Education and learning expand the adaptive capacity of individuals and communities, and have transformative effects, reducing vulnerability to climate change. When confronted with climate shocks and stresses, children, families and communities with higher levels of education are generally better prepared and better able to adapt. They are ultimately better able to deal with the consequences of climate-related shocks and stresses.

This means that families can better protect their physical security and livelihoods, and can limit the use of negative coping strategies, such as withdrawing children from school (Figure 14).⁶³ Looking at education systems at large, shocks and stresses, including climate induced ones, dramatically impact the longer-term investment required to transform systems, further decreasing their resilience to future disruption.

In the past two decades, countries in Africa have made substantial progress in increasing children’s access to education. Over half (53 per cent) of countries in Africa have a legal framework that establishes at least nine years of compulsory and free schooling.⁶⁴ Between the years 2000 and 2019, the proportion of primary school age children who were out of school decreased from 35 per cent to 17 per cent.

In the same time period, the proportion of lower secondary school age children who were not in school also decreased, from 43 per cent to 33 per cent.⁶⁵ Despite the progress, some 34 million primary school-age children and 72 million secondary school-age children are still out of school.⁶⁶ Two out of five (42 million) primary and secondary out-of-school children live in Western Africa, while the Eastern Africa region is home to one third of the continent’s out-of-school children of the same age group.⁶⁷

FIGURE 14
Access to education affects a child’s capacity to cope with climate shocks



Children from low-income families, and those living in rural areas, face substantial inequalities. For instance, a child from a household that is in the richest income quintile is eight times more likely to complete primary school, and 12 times more likely to complete upper secondary level, than a child from the poorest quintile.⁶⁸

Across all regions of the continent, more than half (53 per cent) of the young people who are at the appropriate age to attend upper secondary school are not enrolled in school. This varies from 27 per cent in Northern Africa to 61 per cent in Eastern Africa. Access to technical and vocational education and training is also low on the continent with just 3 per cent of young people aged 15-24 years enrolled in vocational education and training in 2019.⁶⁹ In the same year, more than in one in four (21 per cent) of young people aged 15-24 years in Africa were not in education, employment or training.⁷⁰

The low quality of education remains a crucial challenge and constrains learning outcomes. The proportion of African students in early grades of primary school who achieve the minimum proficiency is just 47 per cent in mathematics and 36 per cent in reading. The situation worsens at the end of primary education, with only 22 per cent achieving the minimum proficiency in mathematics and 35 per cent achieving the minimum proficiency in reading⁷¹.

Available evidence indicates that key determinants of learning outcomes in Africa include preschool attendance, parental literacy, availability of reading materials at home and quality of school infrastructure and classroom equipment.⁷² Low quality education also contributes to low completion rates with the 2019 gross intake ratio in the last grade of primary standing at 73 per cent, an improvement from 59 per cent in 2000, but remaining below desired levels.



Across all regions of the continent, **more than half (53%)** of the young people who are at the appropriate age to attend upper secondary school are not enrolled in school.

Education systems all over the world are facing exacerbated challenges due to the effects of climate change. A recent study⁷³ found that from March 2022 to March 2023, the number of crisis-affected school-age-children had increased globally by 25 million, a staggering 12.5 per cent annual increase. Together with conflict, extreme natural events such as droughts and floods, exacerbated by climate change, are key determinants of increases in crisis-affected children. An estimated 83 per cent of out-of-school children in emergencies globally, and 75 per cent of children who attend school but face learning deprivations, live in countries with a CCRI higher than the global median value of 6.4. This indicates that most children deprived of quality education reside in countries with elevated risks of climate change impacts.⁷⁴

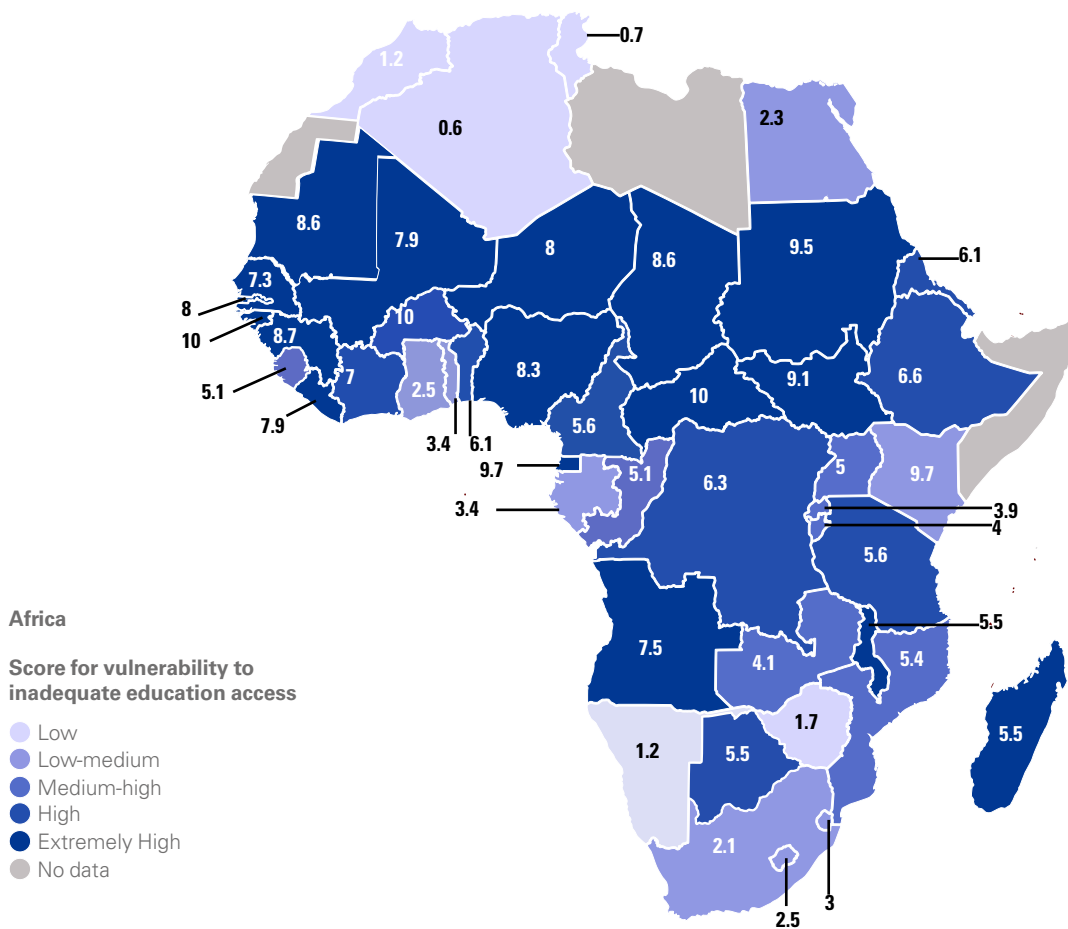
School curricula often do not provide children with knowledge related to climate and environmental

sustainability and disaster preparedness education. Mainstreaming climate and environmental sustainability education into curricula would improve future employability for students and help children make informed choices about climate action and sustainability.

Eighteen of the 47 African countries for which data for this component is available, hold a CCRI score above 7, indicating that children in these countries face an “extremely high” level of vulnerability to climate change due to inadequate education. With the exception of Sudan, this level of vulnerability is recorded in countries that are all in the SSA region. The countries where children have a relatively lower level of vulnerability against this component are mostly clustered on the north coast of the continent (Algeria, Tunisia, Morocco, Egypt) and in its most southern part (South Africa, Zimbabwe, Lesotho) (Figure 15).

FIGURE 15

CCRI score by country for the ‘Inadequate Education’ component



Poverty and inadequate social protection

Families and communities that live in poverty have limited resources to respond to and adapt to the effects of climate change and environmental shocks and stresses. Poor families that are engaged in subsistence farming, for instance, are particularly vulnerable to the effects of climate change and face heightened risks of being pushed into even deeper poverty.

More generally, poor communities are less resilient to shocks and stresses, such as droughts and floods, that simultaneously hit many members of the community, weakening the mutual support systems. These covariate shocks are especially damaging when mutual support systems are the only social protection mechanism in place.

Social protection systems can play a crucial role in decreasing the vulnerability to the effects of climate change, especially when these systems are shock responsive. Interventions such as cash transfers, including child grants, school meals, as well as skills development, can sustain basic livelihood conditions, avoid the use of negative coping strategies, and preserve families access to essentials such as healthcare, nutritious food and education. The potential of social protection to address economic and social impacts of shocks has been illustrated by the response to the COVID-19 pandemic, which triggered an unprecedented expansion of social protection interventions. That is, 48 African countries adopted social protection response measures in the course of 2020.

Africa has seen a significant increase in the political commitment towards social protection, both at country level and across the continent at large, as reflected in multiple continental policies and strategic frameworks.⁷⁵ Coverage rates of social protection programmes have also increased substantially with virtually all countries on the continent implementing a mix of different social protection interventions. Many programmes created as part of emergency response have been mainstreamed.

However, according to recent estimates, only 17 per cent of the continent's population receives at least one social protection benefit compared with the global average of 47 per cent.⁷⁶ That leaves 1.2 billion Africans without any social protection coverage.⁷⁷ The proportion of children covered by social protection in Africa is also quite low with an estimated 10 per cent⁷⁸ of children covered in the WCA regions, while 14 per cent are covered in SSA. Coverage is generally higher in northern African countries, where 29 per cent of children in Tunisia are covered by at least one social protection intervention.⁷⁹

In addition to continuing efforts to increase the low coverage of social protection, African countries are progressively focusing on leveraging social protection systems to become more shock responsive, and better able to build greater household resilience to climate-related shocks and stresses. Enhancing the ability of social protection systems to reach more poor and vulnerable households in the event of climate shock depends on increasing the extent to which shock responsiveness is embedded across all the components of the social protection systems.

A further crucial element is that programmes should be designed with a solid understanding of the risks associated with shocks and stresses that affect vulnerable people. This would allow social protection systems to be more responsive to covariate shocks, such as many of those associated with climate change.⁸⁰

Social protection policy and legal frameworks in Africa have developed quite substantially in recent years. Transforming legal and policy provisions into an effective social protection system requires the involvement of many actors and institutions as well as complex processes. Social protection systems on the continent are often weakened by inadequate governance and coordination and possess gaps in human resources.

Figure 16, extracted from the UNICEF Global Social Protection Framework,⁸¹ provides a visual representation of the key components of a shock-responsive social protection system that is also child sensitive.

The heightened vulnerability faced by children in Africa due to high poverty rates and inadequate coverage of social protection are effectively captured by the CCRI scores for this component. A total of 33 countries have scores above 7 out of 10, indicating "extremely high" vulnerability for this component (Figure 17). Similarly, with the other components, the countries in WCA and SSA have the highest scores with higher poverty and lower social protection coverage. North Africa tends to have lower vulnerability in this component with the five best performing countries all found in this region: Algeria, Tunisia, Egypt, Libya and Morocco.

However, even these best performing countries suffer from major gaps, as shown by the fact that their CCRI scores for this component still put them in the "medium-high" vulnerability group with no country on the continent with a score that puts it in a low vulnerability class (i.e., less than 3.7 out of 10).

FIGURE 16
Component of a child sensitive social protection framework

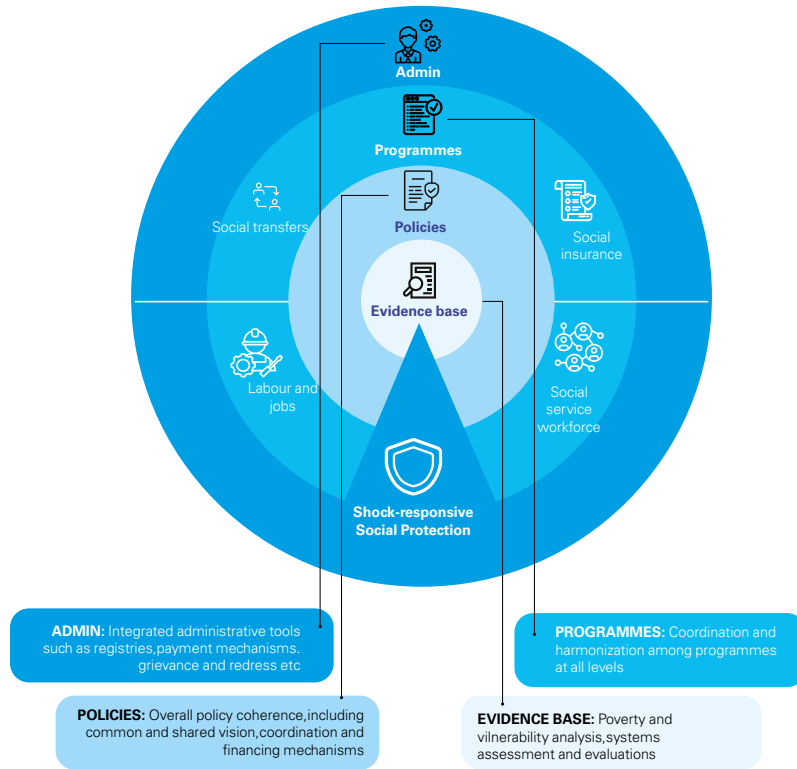
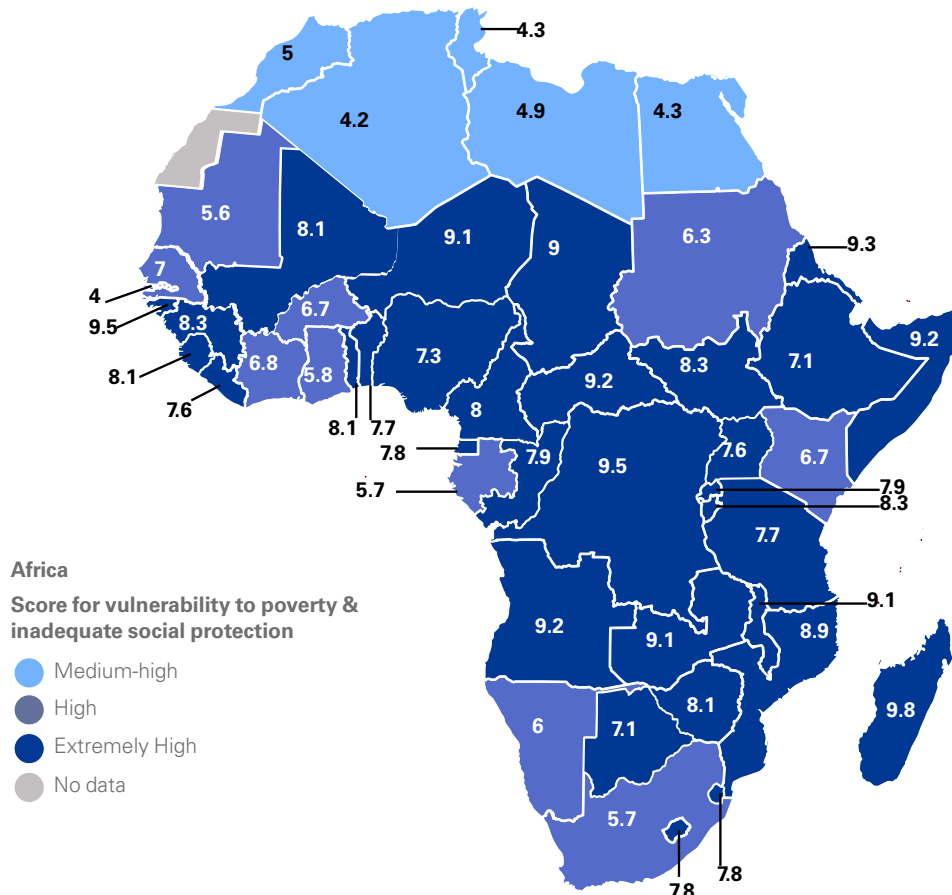


FIGURE 17
CCRI score by country for the 'Poverty and inadequate Social protection' component





05

Overall scores against the Children Climate Risk Index (CCRI)

This section provides an overview of the overall CCRI scores of the African countries. These scores are based on a country's consolidated performance in the different components of the two pillars reviewed in the earlier part of this report (i.e., exposure and vulnerability). The overall CCRI country scores provide a consolidated value of the different components and an overall level of risk for children from the effects of climate change.

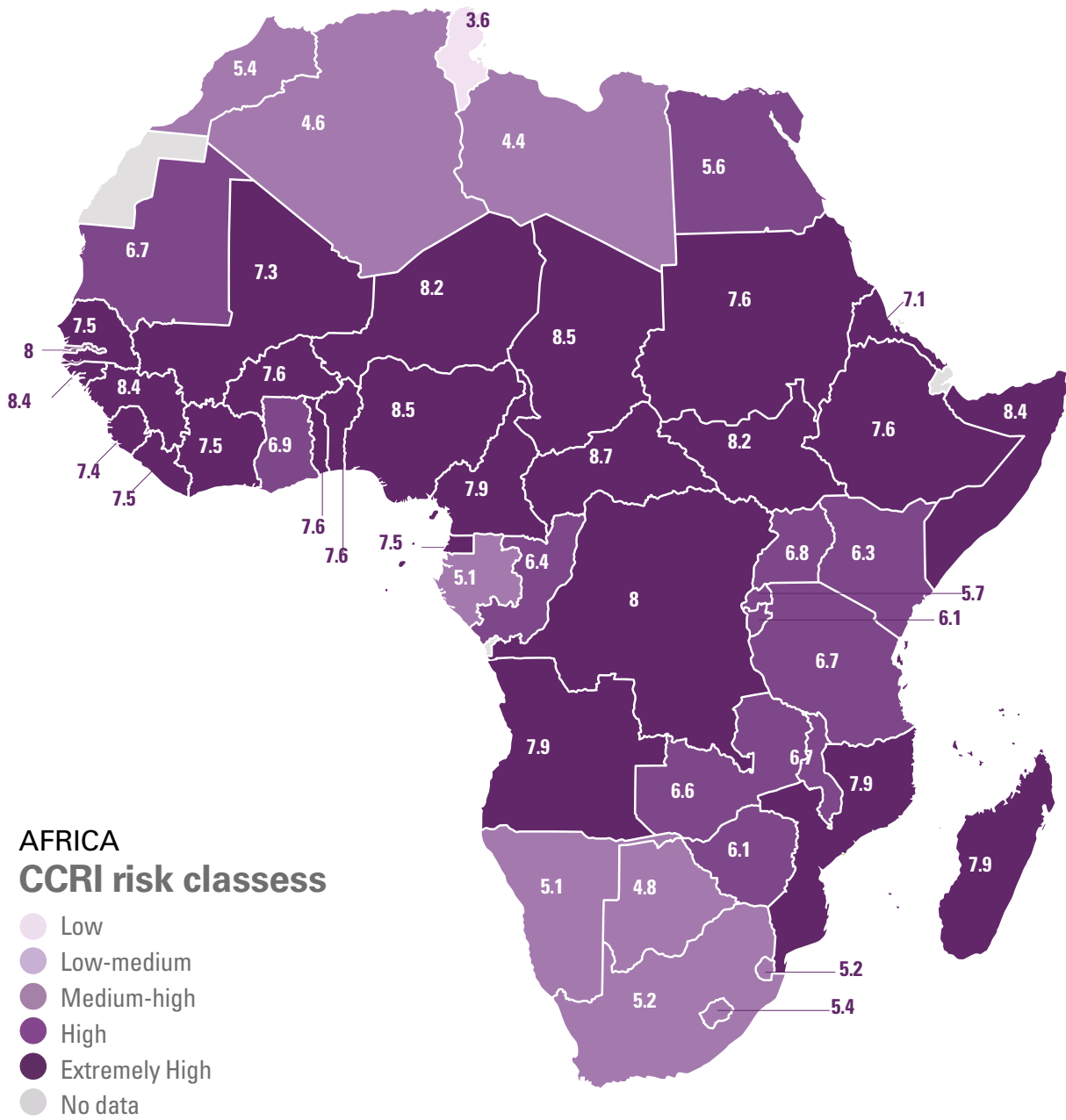
All African countries except one, Tunisia, fall into a climate risk class that is between the "medium-high" and the "extremely high". More specifically, a total of 25 countries on the continent have a CCRI score that puts them in the "extremely high" risk class, i.e., a score above 7 out of 10.) Fourteen countries fall into the "high-risk" class, (i.e., a score between 5.5 and

7); while nine countries fall into the "medium-high" risk class (i.e., a score between 3.8 and 5.4). Tunisia falls into the "low-medium" risk class with a score of 3.6, but is just two decimal points below the upper risk class's lower threshold (Figure 18).

Looking at the CCRI scores by region, while all of the continent's regions exhibit scores that indicate high risks for children, countries in North Africa and those in the south of the continent generally have relatively lower CCRI scores. Conversely, countries in WCA and in East Africa tend to have the highest CCRI scores with 24 out of the 25 countries falling into the "extremely high" CCRI category, an indication of the heightened climate and environmental related risks faced by children living in these regions.



FIGURE 18
Overall CCRI scores by country in Africa



International Climate Finance Gap for Children

The earlier part of this report looked at how the effects of climate change impact countries, communities and, in particular, children on the African continent. It outlined how, across multiple components, children have a distinct and heightened level of exposure and vulnerability to the shocks and stresses caused by climate change.

Against this backdrop, an important role is played by multilateral climate funds (MCFs): international institutions responsible for allocating climate finance from developed to developing countries. A recently released study⁸² provides the first ever in-depth insight on the extent to which interventions, funded through the international climate finance institutions, have focused on children. The study reviewed projects funded through the MCFs in the period 2006-2023 with a total value of US\$51.5 billion.

To determine the extent to which a project can be considered as child-responsive, the study employed three criteria, namely: 1) Whether there was an explicit consideration of children in activities and outcomes. 2) Whether it strengthened climate resilience of essential social services related to the specific risks to, and vulnerabilities of, children such as health, WASH, social protection, and 3) Whether the project was inclusive of children as important stakeholders, supporting their participation or agency.⁸³

Each project was scored against these three criteria. The projects that scored 3/3 (meeting at least one indicator under each criterion) were considered good practice examples of child-responsive climate finance. Projects that scored 2/3 may have contributed towards important interventions for children in certain areas but lacked a deliberate attention to child-responsive investment in essential social services or the engagement and empowerment of children. Finally, the projects scoring 1/3 or 0/3 failed to adequately consider children.

The main finding of the study was striking as it showed only a very small proportion (2.4%) of international climate funding from the MCFs could be classified as supporting projects that had a focus

on children (i.e., meeting all the 3 above-mentioned criteria). It also revealed that their value was just \$71 million per year on average over the study period.

Even more concerning was the fact that, according to the study, this estimate overrepresents the proportion of funding directed towards child-responsive interventions, since project activities directed toward children represented a marginal, rather than a significant, objective of project aims and activities in the vast majority of cases. Furthermore, the study found that 89 per cent of the overall MCF funding was allocated to projects that were *not* child responsive, meaning they met either none or just one of the three child-responsiveness criteria. The remaining 8.5 per cent of funding was found to be allocated to projects that met two of the three criteria.



The main finding of the study showed that **2.4%** of international climate funding from the MCFs could be classified as supporting projects that had a focus on children

When the age group was broadened and included funding to interventions that are *either* child-responsive *or* youth-responsive, the situation remained concerning. In fact, the proportion of MCF spending allocated to programmes focused on this broad demographic group represented just 6.6 per cent of the total funding.



The findings of this new study have shed light on a major shortcoming in international climate financing: the striking contradiction between the heightened exposure and vulnerability of children to climate change, as outlined by this report, and the extremely low priority given to children in the international climate finance.

Children and young people are not only two crucial demographics for the future of any society, they also often represent the majority of a country's population. This is the case in the many African countries. Climate finance and action that overlooks the specific exposure and vulnerability of children weakens the efficacy of climate change response measures, and risks contributing to adverse social outcomes and deepening inequalities.



Examples of Countries Responses to Climate Change

This section of the report presents eight successful examples of countries' responses to climate change and environmental degradation, as well as one global partnership (the Green Jobs for Youth Pact). These programmes, implemented with the support of UNICEF and the United Nations Environment Programme (UNEP), as well as other UN agencies including the International Labour Office (ILO) and the World Food Programme (WFP), aim at accelerating adaptation to climate change and

environmental degradation while mitigating the negative effects they bring on people and nature at large. These programmes support families, communities, and countries by enhancing their resilience to increased hazards caused by climate change. Since the most vulnerable and marginalised members of society, including children, bear the brunt of these hazards and effects, they are a key focus of these programmes.



South Sudan: Joint Resilience Project

Children in South Sudan are extremely vulnerable to the effects of climate change as shown by the country's score in Pillar 2 of the CCRI of 9.2, one of the highest in the continent. Cognizant of the multifaceted nature of vulnerability, UNICEF and WFP have worked together with various government institutions, NGOs, and other partners to design and implement a multi-year Joint Resilience Project that is reaching more than 550,000 South Sudanese children through an integrated set of interventions in health, nutrition, WASH, and education.

UNICEF and WFP are providing nutritious meals to students, as well as developing school gardens, which supplement meals with fresh fruit and vegetables. To prevent malnutrition, particularly among young children, the project supports community nutrition volunteers who provide nutrition information to mothers with newborns and young children in communities and in hard-to-reach areas, along with malnutrition screenings, treatment, and emergency food supplies.

These interventions are complemented by nutrition centres that have been equipped and resourced to

provide a space where mothers receive services. The project supports mother-to-mother groups where mothers learn about proper nutrition and breastfeeding. Mothers also cook nutritious food together and distribute it to their respective communities. The health component of the project includes children's health screenings and vaccinations in nutrition and health centres, as well as vitamin A supplementation, deworming, training of vaccinators, and health centre referrals.

The project's WASH component supports the construction of latrines in schools. School hygiene clubs also provide information on good hygiene and sanitation practices. UNICEF is constructing water kiosks within the communities. These are small water purification plants where water from springs is collected in reservoirs, treated to make it safe for drinking and then pumped up to water kiosks.

This successful multisectoral project uses multiple entry points, including communities, health, and education facilities while improving the resilience of beneficiaries through improved access to essential services, promoting healthy behaviours and practices.



Zimbabwe: Sustainable energy solutions enable progress on quality of care and healthy environments⁸⁴

In some areas of rural Zimbabwe, unreliable or lack of access to energy provides a major constraint to the ability of health centres to provide adequate health services. At the same time, households tend to use unhealthy methods to cook food, burning fossil fuel and wood.

UNICEF Zimbabwe and the Ministry of Health and Child Care of Zimbabwe implemented the Sustainable Energy for Health Facilities and Surrounding Communities programme in four of the country's districts. The programme, which focused on children, adolescent girls, and women, has three components: 1) installing solar power in 30 healthcare facilities in four districts between 2018-2022, 2) developing a sustainability framework to guide operation and maintenance of the solar systems and 3) promoting the household adoption of fuel-efficient cookstoves. The total cost of the programme was just over US\$3 million.⁸⁵

The solar systems provided uninterrupted power for health facilities serving more than half a million people.⁸⁶ The solar-powered staff quarters and health facility water points led to improved healthcare

offered by the facilities, enhanced water quality and supply at the facilities and surrounding communities, and even improved staff motivation and retention.

Fuel-efficient cookstoves were introduced across 26 communities surrounding the newly solarized health facilities. A total of 5,473 households adopted the cookstove model, while 7,470 women were trained in cookstove construction, and 1,000 women were trained in small business operations. Finally, 95,768 mothers and their female neighbours were trained on infant and young child feeding, including cooking demonstrations using the cookstoves. Households which adopted the cookstove model reported a reduced reliance on solid fuels or wood, reduced child respiratory infections from improved air quality and greater incomes for women who built and sold the cookstoves.⁸⁷

This intervention proved effective in improving health outcomes for people through increased energy resilience of the health facilities. At the same time, through the community interventions, it decreased the extent to which households use solid fuels as their primary source of domestic energy to cook.



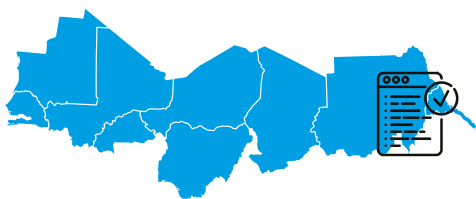
Algeria: Climate change integration into the national curricula

Education systems can play a crucial role in fostering a community's ability to tackle climate change. In this context, school curricula are crucial tools that can support and strengthen children's potential as agents of change, while helping them to grow into adults that are equipped with the knowledge and skills required to better face the consequences of climate change, while contributing to its mitigation.

Cognizant of this, UNICEF Algeria and the Ministry of Education of Algeria partnered to strengthen the extent to which school curricula covers climate change-related issues. This initiative, conducted in the framework of the World's Largest Lesson,⁸⁸ consisted of a lesson on climate change and water

scarcity that was conducted in all schools nationwide. The lesson reached some 8 million students from the 4th grade through the 12th grade.

A crucial outcome from the initiative is that the Ministry of Education has included climate-related lessons into the national curriculum for all three educational cycles, i.e., primary, lower, and upper secondary, ensuring the long-term sustainability and impact of this intervention. UNICEF has also supported the development of pedagogical resources, including digital classroom practices and paper resources that have been distributed to 26,000 schools nationwide.



Sahel: Building resilience in Sahel (BRS) programme⁸⁹

In the central Sahel, the combined effects of conflict and climate change have resulted in a severe humanitarian crisis. In 2022, the Sahel region saw a wave of deadly climate-linked disasters, including floods and a drought that resulted in lower-than-expected agricultural yields, and rising insecurity. Across Mali, Mauritania, and Niger, 12.3 million people needed humanitarian assistance by end of 2022, including 7.5 million children.

Since 2019, UNICEF with its partners have implemented the regional Building resilience in Sahel (BRS) programme across Mali, Mauritania, and Niger. The programme is based on an integrated, people-centered approach that links humanitarian and development programming grounded in an analysis of risks and shocks. To increase the resilience of social systems, the programme supported Sahelian governments to strengthen six social sectors at national, decentralized and community levels.

By the end of 2022, UNICEF had supported the construction of **315** climate-resilient water systems



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In partnership with national institutions, in 2020 the programme modeled an integrated package of interventions that supported the delivery of basic social health, nutrition, water, sanitation and hygiene, education, child protection and social protection services. In the course of 2022, the programme also enhanced and scaled-up the resilience models.

The programme empowered communities to mitigate the effects of shocks and stresses and manage residual risks using participatory and risk-informed planning approaches while supporting comprehensive social service delivery. The programme included multiple integrated building blocks such as a high impact adaptive health intervention targeted girls and women, newborns, children, and adolescents aimed at providing equitable, quality, and integrated immunization services. Jointly with WFP and other partners, UNICEF supported a continuum of services from malnutrition prevention to treatment. This included addressing factors such as household food insecurity, poor food practices, high prevalence of childhood and water-borne diseases, lack of access to water and sanitation services, fragility of health systems, and chronic poverty.

By the end of 2022, UNICEF had supported the construction of 315 climate-resilient water systems, with diversification of power sources for pumped water, through solar panels and other renewable energies contributing to continued access to safe water for 355,00 people in vulnerable communities affected by shocks. A further intervention in Mali used a preventive nutrition package that reached families with children aged 6 to 23 months with cash transfers and complementary services for their nutrition. Finally, the capacity of decentralized child protection actors was strengthened for the identification, referral, and case management of vulnerable children in targeted regions.

Since 2020, the programme has provided at least 3 million vulnerable people, including 2.7 million children in Mali, Mauritania, and Niger, with access to essential social services delivered through decentralised government services and communities, including during times of shock and stress.



Cote d'Ivoire: Building schools with bricks made of plastic waste⁹⁰

In Côte d'Ivoire, education is mandatory for children aged 6 to 16 years old, yet more than 1,6 million children in the country still do not go to school. Distance from school and overcrowded classrooms are among the barriers that constrain children's access to education.

Waste and pollution in Cote d'Ivoire also pose major public health risks. Without plastic waste management, groundwater pollution can become an issue and compromise access to clean water. Plastic-clogged drains cause flooding, damaging infrastructure while air pollution from burning plastic trash poses major environmental and health risks.

UNICEF Côte d'Ivoire partnered with the enterprise Conceptos Plasticos to build classrooms, latrines and health storage units with construction materials made of plastic waste. The construction has been carried out by small local companies using local workers. The construction materials are durable and easier to transport. At the same time, the modular brick assembly technique doesn't require cement, screws, or glue, making it much faster and easier to build. A classroom made of recycled plastic bricks can be completed in a few weeks. The technique is also easy to teach even to unskilled workers.

The pilot was successfully conducted in 2018 and the project received government endorsement in 2019. In 2020, a factory was built in the country and produced the bricks and the construction materials using plastic waste products. The direct contribution of the government of Cote d'Ivoire included the provision of free access to land, funding for road construction, reimbursement of the cost of electricity setup and tax exemption on imported machineries.

To date, 314 schools have been completed using recycled building materials, while 94 are under construction while plans are being drawn up for an additional 122 schools.

This innovative project offers a better way to build classrooms with limited resources, helping address barriers to education. At the same time, due to its ease-of-assembly, bricks made from plastic waste can provide employment opportunities for young people in local communities. Waste pickers working informally at landfill locations and on city streets also play a role, helping to clean up the environment while providing resources to manufacture materials, which go into building schools.





Kenya: Innovative, sustainable, and affordable toilets ⁹¹

Kenya has set the ambitious target of achieving 100 per cent access to basic sanitation services by 2030. This target is particularly challenging in rural areas, where the coverage of basic level services stands at only 31 per cent.⁹²

The youth-led organisation Saniwise, developed a toilet based on innovative technology that is sustainable, affordable, and ecologically friendly. The toilet uses an innovative approach to waste resource recovery through the use of black soldier fly larvae to reduce the volume of fecal matter, while also harvesting highly nutritional biomass that can be further processed into feed ingredients for chickens and fish. This provides a cheap and protein-rich feed source, promoting food security and reducing waste.

The Saniwise toilet addresses the challenge of the high costs of toilet construction by adopting a user-friendly business model that allows for payment in instalments. This enables even those with little capital to access the unit and improve their sanitation facilities. Also, the toilet is made using locally available resources, such as recycled plastic, which not only reduces the cost of production but also provides an innovative way of addressing the plastic waste pollution problem.

The toilet promotes sustainability through its adoption of a circular economic approach. The technology has three revenue sources through waste

resource recovery, making it financially sustainable in the long term. The biodegraded fecal sludge is used as a soil conditioner, providing further benefits to the environment, and promoting sustainable agriculture practices.

The Saniwise team has benefited from UNICEF-supported training and seed funding, through both Generation Unlimited (GenU) and the Youth Agency Marketplace (Yoma). Generation Unlimited is a multi-sector partnership which aims to see more than 30 million young Kenyans in education, training, or employment by 2030. As part of promoting young people's creativity, GenU runs an annual youth challenge – imaGen Ventures – which targets youth groups with innovative ideas. This includes boot camps, where participants gain business skills and seed funding for the winning teams.

The Youth Agency Marketplace (Yoma) is a digital marketplace that helps young people boost their employability by completing personalized online training courses, taking part in challenges and community activities, and connecting with potential employers. As young people complete tasks, they are rewarded with digital tokens that can be swapped for goods or services, and their successes are recorded on a digital CV which they can share with potential employers.

In partnership with the Kenyan government, UNICEF is rolling out Yoma through local youth centres across the country. Saniwise staff have taken part in the Yoma training on digital marketing at a youth centre where they acquired essential skills to help promote business online.

Participating in the Generation Unlimited challenge has also helped Saniwise expand its business. During the bootcamp, the young team tested its products, registered the business, learned about financial planning and honed investment pitches. These efforts paid off, as Saniwise went on to compete in the global GenU competition, ultimately winning second place overall and around 1.2 million Kenya shillings (equivalent to US\$ 8,310) in seed funding.

The success story of Saniwise provides an excellent example of how young people can be empowered to be agents of change by using sustainable business models that, through innovative solutions, help communities tackle environmental and climatic hazards.





Uganda: Ecosystem-based Disaster Risk Reduction (Eco-DRR) model

Over the past decade, disasters linked to natural hazards have intensified due to the effects of climate change, posing a greater danger for the populations living in the affected areas, including to their life and livelihood. In this context, there is a need to strengthen and upscale ecosystem-based approaches to disaster risk reduction to help safeguard vulnerable communities.

Between 2019 and 2022, UNEP in-collaboration with Partners for Resilience (PfR),⁹³ implemented a scalable ecosystem-based disaster risk reduction (Eco-DRR) model in five key countries (Ethiopia, Haiti, India, Indonesia, and Uganda), working alongside key government institutions and communities, strengthening their capacity while shaping Eco-DRR policy interventions.

The Eco-DRR project implemented in Uganda strengthened the capacity of 160,000 vulnerable individuals, residing across five districts within the Eastern Aswa Catchment region in the country's north. The project focused on enhancing resilience against both drought and flooding. Specifically, the project emphasized the vitality of integrated risk management (IRM) and inclusive risk governance through improved catchment-based water resources management that is risk-informed, gender- and ecosystem-sensitive.

To support this, a model for upscaling community resilience was developed through three core

components: ecosystem restoration/protection, disaster risk reduction, and climate smart livelihoods.

In the context of Uganda, the Eco-DRR project placed emphasis on ecosystem restoration and protection through the micro-catchment restoration and the establishment of guidelines for improved drought and food management. The project further focused on the establishment of micro-water catchment committees and national guidelines for improved drought and food management. Eighty-one community-based organisations were trained on IRM, while other groups trained include village savings and loans associations, district government members, and Aswa catchment management committee members.

A cost-benefit analysis was conducted using efficiency and equity analysis, to help demonstrate the benefits of Eco-DRR and how resilience enhancement interventions largely outweigh the value of their initial costs. In the case of Uganda, with a project budget of just above US\$1 million, it is estimated that over 10 years, the present value of net benefits is 197,6 million US\$, including reduced property damage, income losses, carbon capture and pollution reduction.⁹⁴ The Uganda case study lays the foundation for demonstrating the need to strengthen multi-actor partnerships for large-scale implementation of Eco-DRR to help achieve progress toward international frameworks and agreement such as the Sendai Framework for Disaster Risk Reduction and the 2030 Sustainable Development Agenda.





Tanzania: Ecosystem-based adaptation projects

In Tanzania, areas along the country's coastline have been increasingly affected by sea-level rises that have degraded natural ecosystems, damaged wells with saltwater, and ruined infrastructure.

UNEP and partners⁹⁵ have implemented two ecosystem-based adaptation projects to address adaptation needs in Dar es Salaam and in five coastal districts. The two projects focused on: 1) developing core capacity to address adaptation to climate change in productive coastal zones, and 2) implementation of concrete adaptation measures to reduce vulnerability of livelihoods of coastal communities. Overall, 526,000 people benefited from the project interventions while an estimated 3,000 square meters of coral reefs and 1,000 hectares of mangroves were restored.

The approach used by the projects included building and upgrading seawalls, relocating boreholes to protect them from rising seas, building rainwater harvesting systems, rehabilitating drainage infrastructure, and restoring mangrove forests and coral reefs.

The construction of a rainwater harvesting system in the Kingani School in the Tanzanian town of

Bagamoyo is one of the interventions implemented as part of these ecosystem adaptation project. Rising sea levels, increased drought and reduced or erratic rainfall made the school's drinking wells salty and students would get sick from drinking unsafe water they fetched from watering holes. The school administration tried to address the problem by having new wells dug, but they quickly became salty from seawater intrusion. The school then started paying for water to be trucked in, but this soon became unaffordable. The school also experienced an increase in student absenteeism.

The UNEP project involved rooftop guttering that fed water into a series of large tanks for storing water that students could use for drinking, washing, and cooking. The concrete and plastic tanks they set up hold some 147,000 litres of water, collected during the rainy season, and stored in the tanks for dry season use.

The school playground is now dotted with large water tanks that students drink from without the fear of health issues. The new system is a sustainable solution that has effectively tackled education and health-related concerns.



The concrete and plastic tanks they set up hold some **147,000 litres** of water, collected during the rainy season, and stored in the tanks for dry season use.

Green Jobs for Youth Pact

A partnership between the International Labour Organization (ILO), UNEP (through GO4SDGs⁹⁶), and UNICEF (through Generation Unlimited), is working with young people, governments, social partners, employer and worker organizations, education institutions, and the private sector to design and implement the Green Jobs for Youth Pact. The Pact helps provide employment opportunities for youth in a sustainable economy. It aims to develop one million new green jobs, transform one million existing jobs, and help 10.000 young green entrepreneurs start their businesses by 2030.

The objective of the pact is to invest in solutions that limit global warming and contribute to creating green job opportunities. It is estimated (ILO, 2022) that green policy measures can create 8.4 million jobs for young people by 2030 and that 40 per cent of all jobs depend on a healthy climate and ecosystem (ILO, 2018). Policymakers, workers, employers, and educators need to be active agents for the necessary transition toward a sustainable and inclusive economy by supporting young people with the skills to access green and decent jobs.

The pact operates through the three following lines of action:

- **Youth employment and green entrepreneurship:** Employers are supported in green, circular, and sustainable business models that reduce waste, pollution, and resource use while increasing the demand for skills for green jobs.
- **Education and training for green skills:** Universities and knowledge institutions equip young people with new skills needed for green jobs.
- **Empowerment and youth engagement:** Youths are trained in policy advocacy and the social component of climate change.

The Pact that was launched during COP27 through several events bringing high-level speakers and national and operational experts, will be co-designed and implemented with youth champions via a Youth Advisory Group with young experts from various sectors and geographies. Representatives from youth expert constituencies will join, amongst others: YOUNGO, Children & Youth Major Group accredited to UNEP, Students Organizing for Sustainability International, GenU Young People's Action Team, Young Trade Unionists (ITUC nominee), and young employer's representative.

The pact calls on all actors to be part of this unique partnership for action to close the skills gap in developing countries, targeting climate-vulnerable sectors, and contributing to a systemic change harvesting benefits for people, the planet and prosperity.



Conclusions and Recommendations

This report has shown how children in Africa are subjected to extraordinarily high levels of *exposure* and *vulnerability* to the effects of climate change and environmental degradation. By providing an overview of the eight components of exposure of the CCRI, the report has highlighted the fact that while the intensity of such exposure varies across the continent, all countries and virtually all children, are subject to substantially heightened risks.

While children and communities in the northern part of Africa tend to be exposed to higher risks related to water scarcity and air pollution, those living in the west and eastern parts of the continent, particularly in the tropical zone, are more affected by the risks posed by vector borne diseases, heatwaves, and riverine flooding. Some risks such as tropical cyclones and coastal floodings, are higher in specific areas of the continent, while the risks related to soil and water pollution affect children across the continent.

When looking at the extent to which the vulnerability of children to climate change is heightened by the inadequate availability of essential services, the report shows how *all* countries have gaps, with those in tropical areas of the continent showing the highest gaps resulting in heightened child vulnerability across the four components that are included in the CCRI (health and nutrition, WASH, education, and social protection). A summary of this multifaceted scenario is provided by the overall CCRI scores (see page 28 of this report). As many as 39 African countries, out of the 49 for which data is available, have an overall CCRI score that puts them in the “extremely high” or the in the “high” risk class. This finding provides a stark warning and highlights the urgent need for the responsible stakeholders to take action by prioritizing the strengthening of climate change adaptation and mitigation efforts across the continent.

As the frequency and intensity of climate-induced events increases, families and communities on

the continent, especially the poorest and most vulnerable, will find it increasingly difficult to cope with and recover from shocks. Children and their families will likely use negative coping strategies to absorb shocks but will struggle to adjust and cope with multiple shocks at the same time.

Children and young people will need to employ “adaptive capacity” techniques to live in a climate-change impacted world. This capacity needs to be developed from a young age. Education and skills enhancement are crucial for children and young people prepare themselves for their future and so that they can also contribute to making it more sustainable.

The report has shown how climate projects often fail to treat children and young people as active stakeholders or agents of change. The involvement of children and young people is critical to ensuring that their needs and rights shape the action required to close the emissions gap and transition to renewable energy.

As this report highlights, recently released evidence reveals a major shortcoming in the priority given to children when it comes to climate finance. This is a striking contradiction when considering the heightened exposure and vulnerability of children to the effects of climate change, as outlined by this report. Climate finance and action that overlooks the specific exposure and vulnerability of children weakens the efficacy of climate change response measures, and risks contributing to adverse social outcomes, deepening inequalities and political instability.

Against this backdrop, key stakeholders, starting from governmental and intergovernmental institutions, and business, have an obligation to act. In doing so, they should prioritize the following set of actions.



Strengthen climate resilience of systems providing essential services to decrease the vulnerability of children and communities.

With the effects of climate change expected to increase over coming years, children face a deadly prospect of intensified exposure to multiple and increasingly severe shocks. In this context, governments have an obligation to prioritize policy frameworks and programmes that increase the coverage, effectiveness and climate resilience of social sector systems, particularly those providing essential services required to decrease the vulnerability of communities and children to climate change through improved access to water and sanitation, healthcare, education and social protection. Chapter 7 of this report provides examples of programmes in this area: *Sahel, South Sudan, Kenya, Cote d'Ivoire and Tanzania.*



Provide adequate domestic and international funding to tackle the effects of climate change, including addressing the large gaps in the extent to which children are prioritized in international climate finance.

Key stakeholders, starting from government and business leaders, should provide adequate funding for climate change adaptation and mitigation. Donor countries, in partnership with receiving countries, need to urgently address the large gap in international climate finance for child- and youth-responsive interventions by exponentially scaling up funding to programmes. Developing countries also need to ensure that an increasing part of their domestic resources is invested in child-sensitive climate change adaptation and mitigation.



Equip children and young people with the knowledge and skills required to understand and cope with climate change and environmental degradation.

Governments and other stakeholders need to develop policies and programmes that provide children with formal and

informal education opportunities linked to climate and environmental sustainability. This includes green skills and knowledge related to disaster risk reduction, laying the groundwork for children to survive and respond to climate risks. Chapter 7 of this report provides examples of programmes in this area: *Algeria and the Green Jobs for Youth Pact.*



Give children and young people a voice and involve them in key decisions that affect their future and that of the planet.

Governments at all levels and other stakeholders need to strengthen the participation and agency of children and young people in climate and environmental-related action and ensure they have space to voice their concerns and ideas, including, for example in the review of Nationally Determined Contributions (NDC) and national action plans, as well as in climate negotiations through official delegations to future COP events. This will allow children and young people to contribute to the efforts of communities and countries to tackle climate change, including mitigating its effects. Child involvement will allow them to contribute innovative solutions. Chapter 7 of this report provides examples of programmes in this area: *Saniwise in Kenya.*



Reduce carbon emissions and pollution

Available evidence clearly indicates that if the worst impacts of climate change are to be avoided, political will, technology, business model innovation, and investment are required to reduce carbon emissions. High income countries must lead the way in drastically and rapidly decreasing their emissions, and *all* countries need to contribute by prioritizing the decarbonization of their economies through large-scale, enforceable emission reduction regimes led by the governments and businesses. See for example in chapter 7, the programme introducing *sustainable energy solutions in Zimbabwe.*

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For every child, a liveable planet.



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