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THE COLDEST YEAR OF THE REST OF THEIR LIVES: Protecting Children from the Escalating Impacts of Heatwaves

FOREWORD

The climate crisis is a child rights crisis – and it is already taking a devastating toll on children’s lives and futures.

Extreme weather is one of the most visible – and most terrible -- ways the climate crisis manifests itself. Over the past year alone, we have seen climate emergency after climate emergency, from historic flooding in Asia to relentless droughts in Africa.

The wildfires and heatwaves that have swept through India, Europe, and North America are yet another sobering example of the impact of climate change on children.

This report, which builds on the groundbreaking 2021 analysis of UNICEF’s Children’s Climate Risk Index, examines the impact of heatwaves on children today – and over the coming decades.

Children, especially young children, are more vulnerable than adults to the effects of extreme heat, which can cause severe dehydration, respiratory trouble and make them more vulnerable to other diseases.

Already, around 559 million children worldwide are exposed to high heatwave frequency -- and we estimate that by 2050, every child on the planet will be exposed to more frequent, longer lasting, and more severe heatwaves.

The world urgently needs to invest in building their resilience – and in adapting all the systems children rely on to meet the challenges of a rapidly changing climate.

The world also needs to listen. Children and young people are most affected by the climate crisis. They are not only demanding change, they are driving it – and they must be at the center of our response. So, it is only fitting that the foreword for this important report is ‘taken over’ by Ugandan climate activist and UNICEF Goodwill Ambassador Vanessa Nakate. I’m grateful for her leadership.

Catherine Russell
UNICEF Executive Director

“Scorched earth” is a military term that describes troops deliberately destroying assets that are valuable to their enemies. It is also what we are doing to our planet. Through our refusal to curb emissions, we

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are allowing global warming to continue. We are literally scorching the earth with escalating heat, deliberately destroying the asset most precious to our collective well-being – our planet.

The last seven years have recorded the highest temperatures in history and temperatures will continue rising. As hot as this year was, it may well be the coldest of the rest of our lives.

This report seeks to find out. It provides estimates for the first time on how many children are exposed to four measures of heatwaves, now and in forecasts for 2050, at both a 'low greenhouse gas emission scenario' with an estimated 1.7 degrees of warming in 2050 and a 'very high greenhouse gas emission scenario' with an estimated 2.4 degrees of warming in 2050.

The new research finds that by 2050, virtually every child on earth – over 2 billion -- will be exposed to a high heatwave frequency, up from only 24 per cent of children in 2020. This is an increase of about 1.5 billion children.

This report also shows the enormous cost of unconstrained fossil-fueled development. The difference between approximately 1.7 and approximately 2.4 degrees Celsius of warming means that by 2050, over 370 million more children will be exposed to heatwaves of long duration.

Every region is affected by heatwaves in different ways, with heatwaves of increasing severity forecast to become more prominent in Europe and with an increasing number of countries in Africa and Asia becoming exposed to more days of extreme temperatures over 35°C /95°F.

This will have a devastating impact on children. The more frequent, longer lasting and more severe heat waves children are exposed to, the greater the impacts on health, safety, nutrition, education, access to water and future livelihoods.

I witnessed this happening to people in the Horn of Africa.

With four consecutive failed rainy seasons and a drought touted as the worst in 40 years, there is insufficient food and water. In the north of Kenya, I spoke to mothers and met children at risk of dying from severe acute malnutrition. It was devastating and that it is avoidable is infuriating.

The children who are least responsible for climate change are bearing its biggest costs. Africa is responsible for less than 4 per cent of global emissions but is suffering some of the climate crisis's most brutal impacts. Lives are being lost from preventable causes because the world is acting too slowly on mitigation and not providing enough support for adaptation.

How a child survives more frequent, severe and sustained heatwaves often depends on where and how they live; whether they are able to escape the heat indoors, have access to climate-resilient water sources, or whether their daily tasks require physical exertion. We must ensure that countries where children are most vulnerable to the impacts of climate change have the resources needed to adapt the critical social services required to protect them.

These disasters are not inevitable or "natural" – they are of our making. This report is an important reminder that we still have a small window of time to influence how children are affected by various forms of rising temperatures. We can prevent the very worst 2050 scenarios by cutting emissions now. We can urgently adapt to protect children from the climate shocks that are now, sadly, inevitable. We can support communities that have experienced irreversible losses or damages. The actions we take now will determine millions of children's fate.

Vanessa Nakate

Climate activist, UNICEF Goodwill Ambassador

SUMMARY

The climate crisis is rapidly accelerating and with it, heatwaves are becoming longer, stronger, more widespread and more frequent. Already, around **559 million children** are exposed to high heatwave frequency and around **624 million children** are exposed to one of three other high heat measures - high heatwave duration, high heatwave severity or extreme high temperatures.

This report provides yet more evidence that children are on the front lines of the climate crisis.

By 2050, virtually every child on earth – **over 2 billion children** – is forecast to face more frequent heatwaves, regardless of whether the world achieves a ‘low greenhouse gas emission scenario’ with an estimated 1.7 degrees of warming in 2050 or a ‘very high greenhouse gas emission scenario’ with an estimated 2.4 degrees of warming in 2050. These findings underscore the urgent need to adapt the services children rely on as unavoidable impacts of global heating unfold. It also makes a case for more substantial emissions reduction, to prevent the worst impacts of the other high heat measures. Millions more children will be exposed to high heatwave severity and extreme high temperatures depending on the degree of global heating reached. Children in northern regions will face the most dramatic increases in high heatwave severity while by 2050, nearly half of all children in Africa and Asia will face sustained exposure to extreme high temperatures.

Heat is especially damaging to children’s health and affects their education and future livelihoods. Countries must act now by:

PROTECTING children from climate devastation by adapting social services.

PREPARING children to live in a climate-changed world.

PRIORITIZING children and young people in climate finance and resources.

PREVENTING a climate catastrophe by drastically reducing greenhouse gas emissions and keep 1.5 degrees Celsius alive

Almost every country is experiencing changing heatwaves. What each government does now will determine the survival of those least responsible for this crisis – our children and young people.

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Historic drought in the Horn of Africa and the Sahel that unleashed severe malnutrition. Heatwaves in China that dried up rivers and damaged crops. Devastating heat in Pakistan and India with temperatures above 48 degrees°C. Record-breaking temperatures throughout Europe that drastically reducing crop yields. Heatwaves that affected over 100 million Americans this summer. The list of heat-related disasters in 2022 goes on and on. Climate change is making this the new normal.

Globally, heatwaves kill nearly half a million people a year. According to the World Meteorological Organization, the past seven years have been the hottest ever recorded. Heatwaves are increasing in frequency, duration, and magnitude. With each passing year, the stark reality is becoming clearer: the impacts of climate change are not just a threat to the future; climate shocks and stresses are here now.

But this is only the beginning. By 2050, millions more children across every region will have to face more extreme high temperatures and more frequent, longer lasting, and more severe heatwaves.

This report provides estimates and analysis on the number and percentage of children in 2020 and by 2050 expected to be exposed to four measures of heat: high heatwave frequency, duration, severity and extreme high temperatures. It examines two warming scenarios for 2050 – a low greenhouse gas emission scenario with an estimated 1.7°C of warming by 2050 and a very high greenhouse gas emission scenario with an estimated 2.4°C of warming by 2050 -- exposing the cost that very high greenhouse gas emissions will have on the lives of children in decades to come. The global average temperature has already warmed 1.1°C above the pre-industrial average. By the end of the century, based on current policies, global heating is estimated to reach 2.8°C. Without immediate and deep emissions reductions across all sectors, limiting global heating to 1.5°C is beyond reach.

This report is a follow-up to 2021's *Children's Climate Risk Index (CCRI)* report which provided, for the first time, a complete – and dire -- picture of children's exposure and vulnerability to climate shocks and stresses. The CCRI report showed how climate and environmental shocks are undermining the full spectrum of child rights. Heatwaves are one clear example.

[Box:]

Heat and heatwave measures and defining 2050 scenarios

For all four heat measures, a global map of the areas exposed to the heat measure was combined with a high-resolution global gridded population dataset to estimate the approximate number of people exposed. The approximate number of exposed children was estimated by applying the proportion of population under age 18 to the approximate number of exposed people in each country. While three of the measures correspond to heatwaves -- high heatwave frequency, duration and severity --- extreme high temperatures correspond to heat.

Heatwave: Any period of three days or more when the maximum temperature each day is in the top 10 per cent of the local 15-day average.

High heatwave frequency: where there are on average 4.5 or more heatwaves per year.

High heatwave duration: where the average heatwave event lasted 4.7 days or longer.

High heatwave severity: where the average heatwave event is 2°C or more above the local 15-day average.

Extreme high temperatures: where, on average, 83.54 or more days a year exceed 35°C.

Shared Socioeconomic Pathway 1 (SSP1): a low greenhouse gas emission scenario with an estimated 1.7 degrees of warming by 2050.

Shared Socioeconomic Pathway 5 (SSP5): a very high greenhouse gas emission scenario with an estimated 2.4 degrees of warming by 2050.

SSP1 is based on international policy agreements and emissions reductions that aim to limit global average temperature rises to 1.5°C above preindustrial levels to meet the Paris Agreement. SSP5 is based on continued economic development based on fossil fuels.

From the poles to the tropics, heatwaves are a global problem

Heatwaves are a global phenomenon. As extreme high temperatures increase and the longevity, duration and severity of heatwaves accelerate, children are increasingly exposed to heat-related vulnerabilities.

Although extreme heat is more deadly in tropical areas that are already hot, rising heat has profound effects across geographies. The four heat measures examined in this report affect people living in various regions differently.

For example, although they are sparsely populated, the most dramatic swings in temperature are occurring in polar regions. This is partially due to temperature changes that cause ice to melt creating a cycle whereby melted ice and permafrost prevent refraction of the sun's radiation, and even more absorption of radiant heat into the ground surface, further exacerbating temperature rises. Earlier in 2022, unprecedented temperatures in Antarctica and near the north pole hit 30-40 degrees above normal. These polar heat patterns are a signal of disruption in the climate system and accelerate the climate crisis.

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In regions that are already hot, extreme temperatures can quickly become deadly. Since late March 2022, an extreme heatwave with temperatures over 40°C affected parts of India and Pakistan, causing casualties, widespread power failures, fires, crop losses and affecting millions of people in one of the most densely populated parts of the world.

In the Central-West region of Brazil, in August 2021, extremely high temperatures were reported over several days. For example, in the state of Mato Grosso, maximum temperatures reached 41°C, about 7°C above normal, contributing to 184,000 wildfire outbreaks, 75,000 of which occurred in the Brazilian Amazon.

Countries in North Africa have been witnessing an increasing number of wildfires in the past years due to extremely high temperatures, causing a considerable humanitarian impact. For example, the fires in Algeria resulted in the death of 44 people and caused more than 250 injuries, and the displacement of more than 500 families in August 2022.

In the United States, nearly every region experienced above-average temperatures in 2022. . At the beginning of September, more than 61 million people were under active extreme heat advisories, watches, and warnings. According to the National Weather Service, heatwaves kill more people than any other weather-related disaster in the United States.

How do heatwaves affect children?

Children are more vulnerable to the impacts of extreme heat and heatwave events than adults. Infants and young children are less able to regulate their body temperature compared to adults, putting them more at risk when exposed to high heat.

Children also spend more time outdoors than adults for play, sports and other activities, putting them at greater risk for heat injury.

Children are affected by heat in two broad ways: 1) risks to health and well-being and 2) social and educational risks.

Risks to physical health include:

- Increased risk of chronic respiratory conditions
- Increased rates of asthma
- Increase in cardiovascular diseases
- Allergy development
- Diarrhoea
- Undernutrition
- Low birth weight
- Heat stroke and heat stress
- Risks of mosquito-borne disease including dengue fever

Heat can also affect children's mental and emotional health. High temperatures are linked to increases in mental health problems in children and adolescents, including post-traumatic stress disorder and depression.

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Extreme heat threatens children's access to food and water. Heatwaves exacerbate drought, causing crop failure and food insecurity, with severe impacts on child nutrition, particularly in communities that depend on agriculture. Higher temperatures also increase demand for water. The resulting water scarcity hinders children's ability to regulate body temperatures and stay hydrated. It can also force communities to rely on unsafe water sources, leading to outbreaks of waterborne diseases like cholera.

Extreme heat affects children's education and future livelihoods. Heatwaves lead to poor health and nutrition in children and are linked to lower achievement in school and lower school attendance. High air temperatures and lower hydration are known to affect children's ability to concentrate.

Heatwaves also threaten children's safety. As pastures and household income dry up, communities are forced to search for and compete over food and water resources. The resulting migration, displacement and conflict exposes children to serious risk of physical harm and violence.

Extreme heat poses unique risks at different stages of childhood. Babies and young children under age 5 are the most at risk of increased heat-related mortality and morbidity. School-aged children are the most affected by asthma exacerbations. Adolescents are vulnerable to exertional heat-related injuries and educational/social risks.

Heatwaves also present significant health risks for pregnant and breastfeeding women. Extreme heat is harmful to children in-utero and can lead to stillbirth, complications from gestational diabetes, and pre-term birth.

The most disadvantaged are the most at risk. Children from the poorest communities from the poorest countries face the greatest risks from heatwaves and yet receive the least support. They often lack access to coping mechanisms that could offer protection such as air conditioning, shelter, water for hydration and healthcare for treatment. For example, a study in Wuhan, China found that children living in the poorest areas with the lowest access to green space were more vulnerable to health risks associated with heatwaves.

Responses

Despite the many alarming risks children face from heatwaves and other climate hazards, public awareness, policy responses and financing remain deeply inadequate.

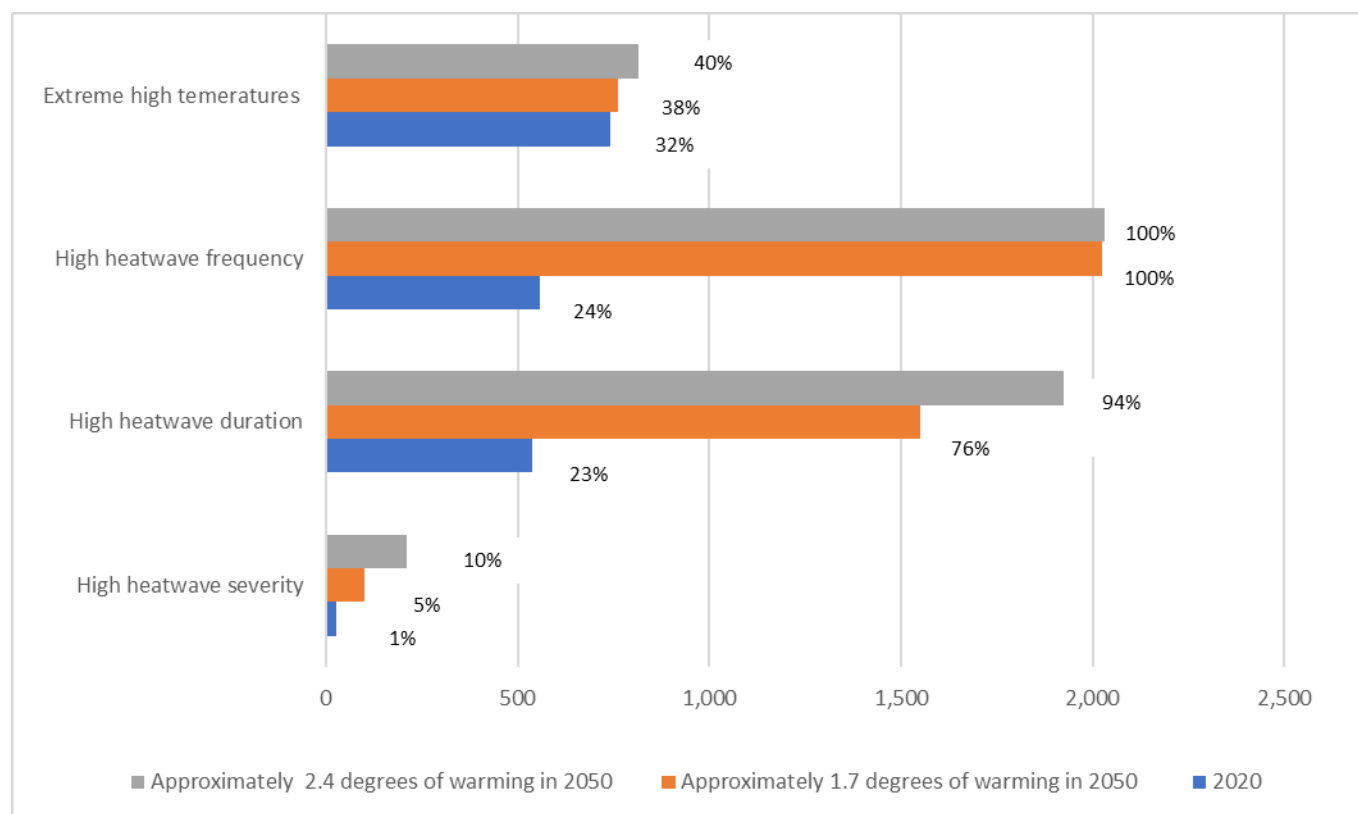
We must **protect** children from immediate climate devastation by adapting the critical social services they need such as health, water and sanitation and education to withstand heatwaves and other climate and environmental shocks. We must **prepare** them to live in a climate-changed world by providing them with the education, skills and opportunities to meaningfully participate in climate policy-making. Protecting and preparing children requires **prioritizing** children in climate finance and resource allocation.

However, to **prevent** the very worst scenarios as outlined in this report, we must drastically reduce greenhouse gas emissions. Mitigation is the only long-term solution to climate change.

CHILDREN AND HEATWAVES IN 2020 AND 2050 UNDER LOW AND VERY HIGH EMISSION SCENARIOS

As shown in the following maps, by every measure, more children are expected to be exposed to heatwaves by 2050 compared to 2020. The impact is especially dramatic for high heatwave frequency and duration that are expected to affect over three-quarters of the world's children. High heatwave severity is likely to affect northern regions in particular and extreme high temperatures will particularly affect children in tropical climates. The data make it clear: both adaptation and mitigation are needed urgently.

Figure 1: Approximate number and percentage of children exposed to high heat measures in 2020 and under low emission scenario with approximately 1.7 degrees warming and under a very high emission scenario with approximately 2.4 degrees warming by 2050



1. Extreme high temperatures

In 2020, around 740 million children (1 in 3 children globally) lived in countries with 84 or more days per year exceeding 35°C. By 2050 under a very high emission scenario with approximately 2.4 degrees of warming, this figure is expected to rise to approximately 816 million (2 in 5 children).

Vast swaths of the planet are already exposed to extreme high temperatures including the Middle East, North and Central Africa, South Asia, and parts of Latin America and Australia. At these extremes of

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temperature and duration, day-to-day routines are impossible, crops and livestock are devastated and more children fall sick or die.

Child exposure to extreme high temperatures is highest in **Africa** and **Asia** in 2020 and will also be highest in these two regions by 2050.

Currently 23 countries fall into the highest category for child exposure to extreme high temperatures. This will rise to 33 countries by 2050 under the low emissions scenario and 36 countries under the very high emissions scenario. Burkina Faso, Chad, Mali, Niger, Sudan, Iraq, Saudi Arabia, India and Pakistan are expected to remain in the highest category in both scenarios.

One in three children in Africa is exposed to this factor in 2020 (about 207 million) and at least 2 out of 5 children are expected to be exposed to this factor under both scenarios in 2050 (42 per cent / about 274 million children SSP1 under and 44 per cent / about 287 million under SSP5).

Two out of five children in Asia are exposed to extreme high temperatures in 2020 (about 520 million). About half of children in Asia are expected to be exposed under SSP1 and SSP5 in 2050 (47 per cent / about 471 million children under SSP1 and 50 per cent / about 502 million under SSP5).

Map 1.A Areas exposed to extreme high temperatures, 2020

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Map 1.B Areas exposed to extreme high temperatures, 2050 low emission scenario with an estimated 1.7 degrees of warming

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Map 1.C Areas exposed to extreme high temperatures, 2050 very high emission scenario with an estimated 2.4 degrees of warming

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Source: The extreme temperatures metrics were created by the Data for Children Collaborative using the Scenario MIP from the Climate Model Intercomparison Project 6 (CMIP6) climate model simulations for daily maximum temperature and the Berkley Earth Surface Temperature (BEST) dataset (Temperature data). Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community.

Note: Areas where, on average, 83.54 or more days a year exceed 35°C are included in the analysis of children's exposure to extreme high temperatures.

2. High heatwave frequency

By 2050, under both low and very high emission scenarios, virtually every child on earth will be exposed to high heatwave frequency (i.e., living in areas where the average yearly number of heatwaves is equal to or above 4.5), rising from only 1 in 4 children in 2020.

The implications for children's health and well-being and the need for adaptation are dramatic. The more heatwaves children are exposed to, the greater the chance of developing health problems including chronic respiratory conditions, asthma, and cardiovascular diseases.

While the **Americas** and **Europe** have the highest percentage of children exposed to high heatwave frequency in 2020, **Asia** has the highest absolute number of children exposed.

While only 10 per cent of children in **Africa** are exposed to high heatwave frequency in 2020, this will rise dramatically to 100 per cent by 2050 under both scenarios of warming.

Map 2.A Areas exposed to heatwave frequency, 2020

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Map 2.B Areas exposed to heatwave frequency, 2050 low emission scenario with an estimated 1.7 degrees of warming

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Map 2.C Areas exposed to heatwave frequency, 2050 very high emission scenario with an estimated 2.4 degrees of warming

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Source: The heatwave frequency metrics were created by the Data for Children Collaborative using the Scenario MIP from the Climate Model Intercomparison Project 6 (CMIP6) climate model simulations for daily maximum temperature and the Berkley Earth Surface Temperature (BEST) dataset (Temperature data). Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community.

Note: Areas where there are on average 4.5 or more heatwaves per year are included in the analysis of children's exposure to high heatwave frequency.

3. High heatwave duration

Heatwaves with longer duration pose more risks for children. Prolonged exposure to higher temperatures increases the risk of hospitalization or health impacts.

While about 1 in 4 children live in areas where the average heatwave event lasts 4.7 days or longer as of 2020, by 2050, this percentage will rise dramatically to over 3 in 4 children under a low emission scenario of approximately 1.7 degrees of warming with children in much of Southern, Western and South-eastern Asia, Eastern and Southern Europe, Northern Africa experiencing heatwaves of longer duration. At approximately 2.4 degrees of warming, 94 per cent of children will be exposed with only small areas of southern America, central Africa, Australasia and Asia not exposed to high heatwave duration.

There are deep and terrible effects of failing to limit global heating to 1.7 degrees. Although exposure to high heatwave duration is expected to increase in both emission scenarios, the difference in projections between low and very high emission scenarios means that by 2050, over **370 million more children** will be exposed to high heatwave duration under the very high emission scenario. The world must mitigate its greenhouse gas emissions in order to minimize the worst outcomes for children.

Absolute child exposure to high heatwave duration is highest in **Asia** in 2020 (around 402 million children, or about 1 in 3 children). Relative child exposure is highest in Europe in 2020 (around 53 million children, or almost 2 in 5 children)

Exposure to high heatwave duration is expected to increase dramatically in all regions, particularly in **Africa**, where only a small proportion of children (<5 per cent) is exposed in 2020. This will rise dramatically to 72 per cent and 91 per cent by 2050 under the low and very high emission scenarios.

Map 3.A Areas exposed to heatwave duration, 2020

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Map 3.B Areas exposed to heatwave duration, 2050 low emission scenario with an estimated 1.7 degrees of warming

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Map 3.C Areas exposed to heatwave duration, 2050 very high emission scenario with an estimated 2.4 degrees of warming

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Source: The heatwave duration metrics were created by the Data for Children Collaborative using the ScenarioMIP from the Climate Model Intercomparison Project 6 (CMIP6) climate model simulations for daily maximum temperature and the Berkeley Earth Surface Temperature (BEST) dataset (Temperature data). Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community.

Note: Areas where the average heatwave event lasted 4.7 days or longer are included in the analysis of children's exposure to high heatwave duration.

4. High heatwave severity

Because mortality and hospitalization rates increase with temperature, higher heatwave severity will result in greater health impacts on children.

Under a low emissions scenario with approximately 1.7 degrees of warming, the number of children in areas where the average exceedance of a heatwave event is equal to or above 2°C will almost **quadruple** (from around 28 to 100 million) and see an **almost eight-fold increase** under a very high emissions scenario with 2.4 degrees of warming (from around 28 to 212 million).

Northern regions will see the most dramatic increases in exposure to high heatwave severity.

Child exposure to high heatwave severity will be highest in **Europe** by 2050 (around 1 in 3 children under SSP1 and almost 2 in 3 children under SSP5).

While only a small proportion of children (about 5 per cent) is exposed to high heatwave severity in the **Americas** in 2020, the approximate number of children exposed is expected to increase five-fold by 2050 (from 13 million to 62 million).

Map 4.A Areas exposed to heatwave severity, 2020

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Map 4.B Areas exposed to heatwave severity, 2050 low emission scenario with an estimated 1.7 degrees of warming

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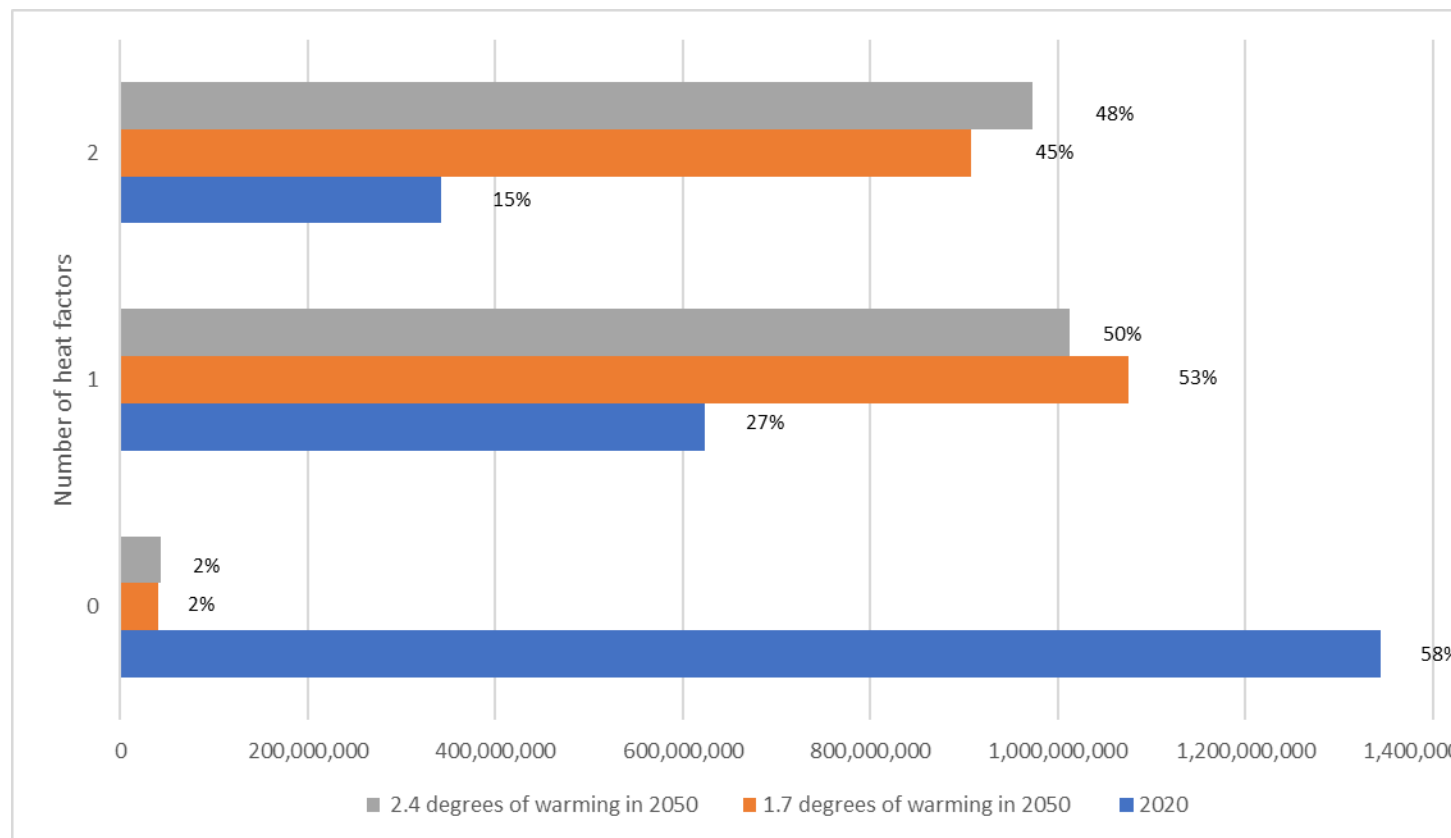
Map 4.C Areas exposed to heatwave severity, 2050 very high emission scenario with an estimated 2.4 degrees of warming

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Source: The heatwave severity metrics were created by the Data for Children Collaborative using the ScenarioMIP from the Climate Model Intercomparison Project 6 (CMIP6) climate model simulations for daily maximum temperature and the Berkley Earth Surface Temperature (BEST) dataset (Temperature data). Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community.

Note: Areas where the average heatwave event is 2°C or more above the local 15-day average are included in the analysis of children's exposure to high heatwave severity.

Figure 2: Approximate number and percentage of children exposed to different numbers of high heat measures globally, 2020, 2050 under a low emission scenario with approximately 1.7 degrees warming, 2050 under a very high emission scenario with approximately 2.4 degrees warming



Note: Three of the four high heat measures are considered in the analysis of children's exposure to different numbers of measures: high heatwave duration, high heatwave severity and extreme high temperatures.

Almost all children worldwide will be exposed to at least one high heat measure by 2050. An analysis of the approximate number of children under 18 exposed to three high heat measures (high heatwave duration, high heatwave severity and extreme high temperatures) has found that:

- While over half (58 per cent) of children were not yet exposed to any of these three high heat measures in 2020, by 2050 this figure will fall to only 2 per cent under either scenario.
- Under either scenario, around half of all children (over 1 billion) is expected to be exposed to one of the three high heat measures by 2050, up from just 27 per cent in 2020.
- The approximate number of children exposed to two of the high heat measures will almost triple by 2050 (from 342 million in 2020 to 907 million under a low emissions scenario with approximately 1.7 degrees of warming and 973 million under a very high emission scenario with approximately 2.4 degrees of warming).
- In 2020, no children are exposed to all of the three high heat measures. By 2050, this will rise to between 5 and 8 million, depending on the heating pathway.

YOUTH HEATWAVE EXPERIENCES

Fatima Faraz, Pakistan, 16

I'm a climate activist from Peshawar, Pakistan. Pakistan is being severely affected by the heatwaves from the unprecedented rainfalls that leads to floods, to heatwaves and droughts. Heatwaves have been a common occurrence in Pakistan since 2015. But these climatic conditions are touching the country earlier and with much more intensity and duration, with the exact toll still unknown. The heatwaves in Pakistan have claimed the lives of thousands of people and caused glacial melting and wildfires in the country. Peshawar was also affected by the recent heatwaves. Many people around me got heatstroke and we couldn't go out during the daytime and we had to reschedule all of our activities to the nighttime. I couldn't go out with my friends. No children could go out to play either. The schools remain closed for the months of June and July because of extreme weather conditions. The people of Pakistan contribute very little to the global heating, yet they are experiencing the brunt of this crisis and will continue to do so if you do not if you do not reduce our global carbon emissions.

Oumou Hawa Diallo, Guinea, 22

I am a passionate environment advocate, co-founder of the NGO Agir contre le réchauffement climatique and involved with the Jeune Voix du Sahel initiative, a platform of young climate champions set up by UNICEF in the Sahel region of Africa.

Sadly, Guinea is the fourth most affected country in the world according to UNICEF's Children's Climate Risk Index. Unfortunately, the consequences of climate change affect children and young people particularly and most severely.

During heavy rains, we experience flooding, which has cost the lives of many children, especially in the Conakry area where I live. These heavy rains on one hand and lack of water during droughts on the other, leads to the destruction of crops, and malnutrition affecting children.

Bush fires and deforestation cause people to move in search of new land, new homes, and new sources of income, which generally leads to tensions of which children are the first victims.

Climate education is crucial in the fight against climate change. It raises awareness and responsibility for the protection and preservation of our living environment. This is why we are constantly advocating for the introduction of environmental education in the school curriculum. A child who is educated to respect the environment by adopting eco-citizen gestures will be an ambassador for the climate wherever he or she goes.

But what does not accelerate our response to climate change is viewing young people as beneficiaries of environmental initiatives. We young people are a powerful resource. We are creative, we can sit around the table for the development and implementation of climate change policies, and follow-up with our leaders and development partners.

We need to be involved as actors in the fight against climate change and not just as beneficiaries of climate initiatives.

I would like to give a message to young people: we need to continue to get more involved in the fight against climate change. Let us amplify our voices for this common cause everywhere.

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I call on leaders to consider the potential of young people. We need action.

Let's all join hands, let's fight to face this major challenge of our century.

Bella, United States, 13

Texas is the second-largest state in America and this summer [2022], we experienced a very bad drought. Eighty-eight per cent of the state was in a drought and the temperatures were very high. We tried to conserve water and energy by taking shorter showers, refraining from using our dishwasher and laundry machine in the daytime because the temperatures were so hot, and we tried to only water our lawns a couple of times a week. Thousands of people in the US die from heat every year which goes to show how important it is that we take action now so we can have a safer, cooler planet for future generations to come. UNICEF has inspired me to advocate for climate change and take action in my community.

Mujtaba Jafar Abdulazeez Alshawi, Iraq. 20

I got involved in climate change advocacy because climate change has a huge impact on Iraq, especially my city Misan. During the summer months the temperatures can reach as high as 50°C . The air conditioning is not available in all public places or at stops on the road, making it challenging to move around and deal with the heat.

The high summer temperatures have also caused the drought of marshes in the south of Iraq where I live, a UNESCO World Heritage Site. The drought has caused the death of many animals and forced people who depend on this land to move elsewhere. Migrating to other areas has increased their chances of being exposed to unsafe working and living conditions.

In my community, people use large air conditioners to deal with the heat, but these consume a lot of energy. Electricity is sometimes cut off, not only for homes, but also for hospitals and other government buildings, causing major problems. In southern Iraq, the humidity can be high due to its proximity to the Gulf and with the increase in temperatures, breathing becomes difficult for many people. Additionally, there has been an increase in dust storms recently due to climate change. This has impacted many people suffering with asthma or those who have a sensitivity to dust.

Climate change hurts young people who are the most vulnerable and often forced to migrate. We need investments in green growth now so that young people can benefit from the positive impact in the short term and be protected from the accelerating climate threats in the long term.

We need to take action now. We need to implement and take previous climate agreements more seriously, like the Paris Agreement, as well as move to sustainability and not rely on materials that increase pollution.

Nkosi Nyathi, Zimbabwe, 19

Imagine walking 5 kilometers to school under the scorching sun without shade in sight. Imagine writing final exams outside in the dry, sweltering heat, and still being expected to pass with flying colours. I don't have to imagine this because this is the daily life for myself and over thousands of schoolchildren in my city alone.

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Climate change is real. I live climate change; my friends and family live it too. We experience droughts, floods, and heatwaves in our day-to-day lives. Sometimes we go from excessive rains and floods that wash away our topsoil, which we depend on for agriculture. Then suddenly, the weather patterns are the opposite. We experience periods of high temperatures and extreme droughts. Land is dry and cracked, crops fail, and animals die.

Because of these erratic weather patterns, some farmers have been forced to shift to growing small grains. Residential areas have also been affected with homes and schools being destroyed. The extreme heat makes it challenging for young people to study or even attend school.

It's hard to be a child no matter what, but especially hard to have a childhood torn apart by climate disaster after climate disaster and wonder what the future holds. This is why I became an activist to fight to have a future. At age 10, I started to recognize these changes and decided to speak up about the effects of climate change and raise awareness about the impacts in my home country. Now, I am working on a solar pump project to help alleviate the water shortages caused by unpredictable power cuts. My vision as a young person is to advocate while implementing because how can I hold decision makers accountable without putting in an effort on the ground myself?

Time is ticking and there is no better time to act than now. The best solution is to include young people in the climate decision-making processes. We are here, we are smart, we have the solutions. Most importantly, nothing for us that is done without us is indeed for us.

Mila, Hungary

We experienced heatwaves this summer in Hungary. At first, I didn't realize it because it wasn't so obvious. It was just a few more hot days, instead of three or four in a week. We had like one or two weeks without any rain and with extreme heat. But I thought it might just be an anomaly. But then we got the news that there are towns in Hungary [where] there's no water anymore. People can't get access to water. And it really hit me. It made me anxious because I thought that it could never happen in the middle of Europe. I thought it's something too big. I didn't know what I could do. And I am very anxious about future summers, because I don't know what the future will bring, but it doesn't look like it will be any better.

WE MUST ACT NOW: PROTECT, PREPARE, PRIORITIZE, PREVENT

The climate crisis is rapidly getting worse. Children and young people face changes on a scale we are only now starting to experience. Heatwaves are just one manifestation. Although heatwaves are already becoming longer, stronger, more widespread and more frequent, by 2050, virtually every child on earth – over 2 billion children – is forecast to face more frequent heatwaves under either warming scenario in this report.

How deadly and damaging the impact of climate hazards become for children and young people is dependent on the action taken now, to limit global heating to 1.5°C and to prepare for and adapt to climate impacts.

UNICEF urges leaders and governments to take immediate action to:

PROTECT children from climate devastation by adapting social services.

Children and young people are the most vulnerable to climate shocks including heatwaves.

- Every country must **adapt critical social services** - WASH, health, education, nutrition, social protection and child protection – to protect children and young people.
- **Food and social protection systems** made fragile by climate change, environmental crises and conflict must be strengthened to withstand hazards and ensure continued access to healthy diets. Increased investments must be made in the early prevention, detection and treatment of severe malnutrition in children, mothers and vulnerable populations.
- **Health systems** must be resilient to climate events and must be equipped to treat children and pregnant and breastfeeding women facing the impacts of heatwaves and other climate hazards.
- **WASH services** must be adapted to withstand climate-related disasters and weather variability to protect against contamination and shortages of drinking water supply. Risk assessments, early warning systems, and innovative technologies to monitor water supply and safety must be implemented to protect against water scarcity and contamination.
- **At COP27**, children and their rights must be prioritized in decisions on adaptation.

PREPARE children to live in a climate-changed world.

Children and young people have a unique stake in the climate agenda, as a direct threat to their rights and future prospects.

- Every country must provide children and young people with **climate change education, disaster risk reduction education, green skills training** and opportunities to **meaningfully participate** and influence climate policy-making.
- **COP27** must see countries strengthen the focus on children's climate education and empowerment in the ACE action plan, adopt it, and implement previous commitments to build youth capacity.

PRIORITIZE children and young people in climate finance and resources.

Protecting and preparing children and young people requires urgent funding and resources.

- Developed countries must deliver on their COP26 agreement to **double adaptation funding to \$40bn per year by 2025** at a minimum, as a step to delivering at least \$300bn per year for adaptation by 2030.
- **Adaptation funding** must make up half of all climate finance.

EMBARGOED until 1PM GMT / 9am EST 25 October 2022

- **COP27** must unlock progress on loss and damage, placing the resilience of children and their communities at the center of discussions on action and support.

PREVENT a climate catastrophe by drastically reducing greenhouse gas emissions and keep 1.5 degrees Celsius alive

Emissions are projected to rise by 14 per cent this decade, putting us on a path to catastrophic global heating.

- All governments must revisit their national climate plans and policies to increase ambition and action. They **must cut emissions by at least 45 per cent by 2030** to keep heating to no more than 1.5°C.
- **G20 countries** - emitters of 80 per cent of all greenhouse gas emissions - must take the lead, yet all countries must act.
- The world must accelerate the transition to renewable energy production, all fossil fuel subsidies must end, windfall profits from fossil fuel producers must be taxed and redirected to the vulnerable, as urged by the United Nations Secretary General.

<https://www.un.org/sg/en/content/sg/statement/2022-05-18/secretary-generals-video-message-the-launch-of-the-world-meteorological-organization's-state-of-the-global-climate-2021-report-scroll-down-for-languages>**METHODOLOGY AND DATA LIMITATIONS**

The Shared Socioeconomic Pathways (SSPs) are scenarios established by the Intergovernmental Panel on Climate Change Sixth Assessment Report and CMIP6 in order to facilitate the integrated analysis of future climate impacts, vulnerabilities, adaptation, and mitigation. They describe plausible major global developments that together would lead in the future to different challenges for mitigation and adaptation to climate change.

SSP1 (sustainability/low emission scenarios) and SSP5 (fossil-fueled development/very high emission scenarios) both envision a development path with increased investment in education and health and relatively high-income growth, leading to a relatively rapid demographic transition and therefore, low population growth in the high fertility countries. In contrast, in currently low fertility countries, optimism about economic prospects sustains fertility at medium (SSP1) or high levels (SSP5). Migration is substantial in both pathways, and urbanization is rapid, although it is less well managed in SSP5.

Individual heat measure maps were constructed for 2020 and the 2050 scenarios. Heatwave events were calculated using the CTX90pct threshold method -- the calendar day when maximum temperature equals or exceeds the 90th percentile of T_{max} , based on a 15-day window.

Global gridded population datasets have been used to estimate (child) population exposure to the four heat measures in 2020 and 2050. Global gridded population datasets have been used for the population exposure analysis in the 2050 SSP1 and SSP5 scenarios that are consistent with the population scenario for each pathway.

The 2020 and 2050 percentages of population under 18 of the medium variant of the World Population Prospects (WPP) are used to estimate the number of children under 18 exposed by country/area. In general, the proportion of population under 18 decreases between 2020 and 2050.

The maps and estimates in this report are based on data derived from a combination of models, expert assumptions and underlying data sets that have been incorporated into plausible scenarios of future states.

The spatial resolution of the climate data does not necessarily allow for the consideration of impacts such as the Urban Heat Island effect, which may lead to an underestimation of some regions' extreme high temperatures. The incorporation of a standard grid system, and the interpolation that was used are also likely to have led to underestimations of extreme high temperatures.

Similarly, the time resolution of the models (often 20 minutes to 1 hour) will also lead to underestimations of the exact maximum temperature. This approach does not consider the impact of humidity, which when combined with temperature to form a Heat Index, can improve the relationship with health impacts.

There are rounding issues in all modelling systems which can lead to uncertainty in projections, particularly where data are standardized to a unifying scale from multiple scales. However, efforts have been taken here to reduce these uncertainties and provide the most reliable estimates of current and future states.

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