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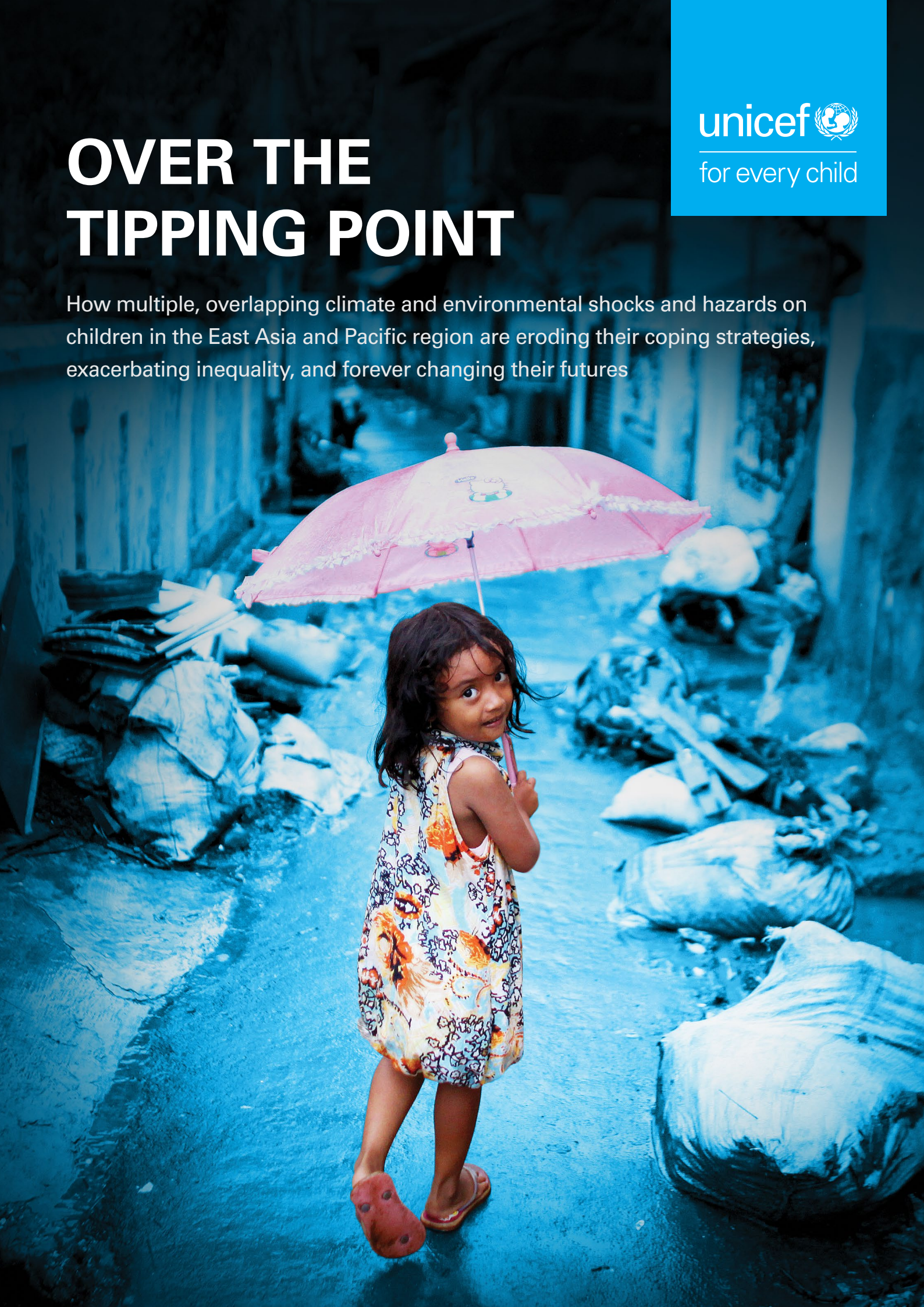
OVER THE TIPPING POINT

How multiple, overlapping climate and environmental shocks and hazards on children in the East Asia and Pacific region are eroding their coping strategies, exacerbating inequality, and forever changing their futures



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Acknowledgments

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Foreword

The climate crisis is already a reality for children in East Asia and Pacific. The numbers and analysis presented in this report are extremely worrying. Children born in the region today are experiencing a six-fold increase in climate related disasters over the last fifty years. Moreover, East Asia and Pacific has the highest proportion of children facing three, four or even five types of multiple, overlapping shocks, stresses and hazards linked to climate change and a degraded environment. This is putting enormous strains on the children, families and communities that UNICEF is serving – causing them to exhaust coping mechanisms and driving a wedge between the wealthy and the poor.

UNICEF staff are witnessing first-hand the impacts of the climate crisis in our field operations in every country across the region, including in the hardest to reach communities, especially on children's health, education and overall wellbeing. We see the impacts of rising sea levels, storms and saltwater intrusion into drinking water supplies in places such as the Pacific Island countries, for example. We see the damage that increasingly frequent and severe storms impose on children's lives in places such as the Philippines and Viet Nam, for example. We see how a child taken out of school is set-back in terms of missed learning opportunities, that may ultimately cost them a very steep price in terms of potential for continued education and future career opportunities.

We know that water is life – yet we see how the climate crisis is increasing water scarcity in some areas, making it hard for children to access safe water and sanitation, while in other areas flooding is contaminating water reserves and destroying critical infrastructure.

We see children struggle to simply breathe because of air pollution across East Asia and Pacific. Air pollution causes respiratory illnesses including pneumonia, which limits lung function, creates health complications that can last for a lifetime, and is one of the biggest child killers in the region. We also see new hotspots for diseases such as malaria due to a combination of warming temperatures and increased precipitation that create stagnant water where mosquitos thrive. And we see how climate change is forcing children and their families to move, both within countries and across borders, often forcibly separated from their families and exposed to exploitation and abuse.

These are the unthinkable realities that children in the East Asia and Pacific region are already facing as a result of the climate crisis and environmental degradation. But solutions are possible. While reducing greenhouse emissions to the full extent needed may only be achieved in the longer term, children are suffering today and we can already point to the mechanisms we must put in place now, to reduce the risks they face. We need to make sure all children continue to receive all the social services that are critical to their survival in the climate crisis. We need to ensure these services are climate-smart, resilient to climate impacts, designed to address climate risks, built to minimize emissions and avoid environmental degradation.

We owe this to children, giving them the best chance to do better than previous generations in leading the world on a sustainable path, tackling the climate and environmental crisis they are inheriting without having borne any responsibility for creating it.

Debora Comini

Regional Director
UNICEF East Asia and Pacific

Abbreviations and acronyms

ADB	Asian Development Bank
CCRI	Children's Climate Risk Index
DRR	disaster risk reduction
GHGs	greenhouse gases
IPCC	Intergovernmental Panel on Climate Change
PICs	Pacific Island Countries
UN	United Nations
UNICEF	United Nations Children's Fund
WASH	water, sanitation and hygiene
WHO	World Health Organization

Executive summary

Climate change has pushed the East Asia and Pacific region across a tipping point of irreversible damage. As the concentrations of human-caused greenhouse gasses (GHGs) have grown, the global temperature has increased by 1.1°C.[1] Within the East Asia and Pacific region, the atmosphere and oceans have warmed, many coral reefs have disappeared, and sea levels have risen. Weather patterns have shifted, changing in frequency as well as severity. Pollution of air, soil and water continues to cause harm. All of this is having a devastating impact on nature, bringing about irreversible changes to many ecosystems, with a consequent loss of biodiversity and the functions and services that human well-being depends on.

Children in the region are already suffering as a result of climate change. New UNICEF analysis reveals that in the East Asia and Pacific region over 140 million children are highly exposed to water scarcity; 120 million children are highly exposed to coastal flooding; 210 million children are highly exposed to cyclones; and 460 million children are highly exposed to air pollution.[2] Globally, approximately 1 billion children – nearly half of the world's children – live in countries that are at an "extremely high-risk" from the impacts of climate change, due to a combination of high exposure as well as high vulnerability and low levels of capacity to cope.[3] All countries in East Asia and the Pacific are at either a "High" or "Extremely High" risk, according to the Children's Climate Risk Index (CCRI).[4] East Asia and the Pacific remains the most disaster-prone region in the world.

Compared with their grandparents, children in East Asia and the Pacific are facing many more climate and environmentally related shocks, stresses and hazards. There has been a significant increase in climate-related extreme weather events in the East Asia and Pacific region over the past five decades, including an:

- 11-fold increase in floods
- 4-fold increase in storms
- 2.4-fold increase in droughts
- 5-fold increase in landslides

On average, the climate-related weather events have increased by 6x for the East Asia and Pacific region.[5]

Moreover, the East Asia and Pacific region is one of the most impacted from multiple types of overlapping shocks and stresses. New UNICEF analysis based on the Children's Climate Risk Index reveals that across the region, 65 per cent of children in the East Asia and Pacific region face four or more shocks, compared to the global average of 37 per cent. These include high exposure to heatwaves, coastal flooding, water scarcity, tropical cyclones, various forms of air, soil and water pollution, riverine flooding, as well as climate-related diseases. All of this puts an incredibly high burden on the children of the East Asia and Pacific region, reducing their ability to survive as well as harming their potential to thrive.

These climate shocks are increasing in frequency and interacting with non-climate shocks like the COVID-19 pandemic and the cost-of-living crisis, among others, creating multiplier effects and cascading impacts across the region, leading to a 'polycrisis' – a situation with multiple near-simultaneous shocks with strong interdependencies.[6] The recurrent climate hazards, shocks and stresses do not have isolated impacts – they have cascading effects on a host of other risks. Droughts, floods and severe weather, coupled with other environmental stresses, compound one another. Other human-driven trends amplify these effects, leading to more shocks, thus creating knock-on effects on several

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1 Intergovernmental Panel on Climate Change (IPCC), 'Synthesis Report of the Sixth Assessment Report (AR6)', 2023.
2 UNICEF, 'Over 700,000 Children Among Most Affected as Super Typhoon Rolly/Goni Hit the Philippines', 2 November 2020.
3 UNICEF, 'One Billion Children at Extremely High Risk From the Impacts of Climate Crisis: UNICEF', 2021.
4 UNICEF, 'The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index', 2021.
5 Author's calculations based on EMDAT data for 14 Countries. Increases calculated using the 10-year average of the number of events between 1968-1978 and 2012-2022. For full dataset see: EM-DAT: The Emergency Events Database, Centre for Research on the Epidemiology of Disasters (CRED), Université catholique de Louvain, Belgium, accessed April 2023, https://www.emdat.be/.
6 World Economic Forum, 'Global Risks Report 2023', Geneva, Switzerland, 2023, https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf.

interconnected systems and sectors. Moreover, climate risks are further exacerbated in areas that are more prone to other non-climate natural hazards such as earthquakes, tsunamis and volcanic eruptions, which are prevalent in several countries along the Pacific Ring of Fire. These threats are even more pronounced in contexts characterized by political instability, ethnic strife and unresolved conflicts, thereby putting the already vulnerable girls and boys to extreme forms of risks including sexual and gender-based violence.

All of this is exacerbating existing inequalities and disproportionately affecting children. Children and families who are already disadvantaged by poverty, and have the fewest resources for coping with climate change impacts, are likely to face some of the most immediate dangers – as they have least means to protect themselves from these risks. Additionally, climate change is impacting the health, nutrition, education, and well-being of children in numerous ways, particularly in low-income communities. But these impacts are not felt equally. Children, despite their limited contribution to climate change, are shouldering the burden due to their reduced abilities to act or protect themselves. They are hit hardest because of the early stage of their physiological and cognitive development. Heatwaves affect children more than adults as they are less able to regulate their body temperature, and young children are at the greatest risk of heat-related mortality and morbidities, including chronic respiratory conditions, asthma, and cardiovascular diseases. Climate-related disasters can also interrupt their education by damaging schools and relevant infrastructures. These calamities are likely to create conditions for economic stress in families, leading to children (especially young girls) to stay home to take care of their families.

And unfortunately, this is only the beginning. The latest synthesis report of the IPCC sixth assessment report (AR6) is a stark eye-opener of the narrow window to prevent the worst from occurring. The report indicates with high confidence that children of today will experience extreme weather events spiralling out of control in their future, impacting their quality of life, as well as their health, well-being and security. Children who were aged 10 or younger in the year 2020 are projected to experience a nearly four-fold increase in extreme events under 1.5°C of global warming by 2100, and a five-fold increase under 3°C warming.[7] These changes will cause extensive direct and indirect harm to children globally, particularly in regions more exposed and less able to withstand the associated impacts, which are predicted to include rising sea levels threatening land and coastal infrastructure, extreme weather including intense storms, pressure on water and food production systems, population displacement, heightened risks of pests and diseases, greater political instability, and many more. Climate change is underpinning a child rights crisis.

Urgent action is needed to address the impacts of climate change on children. Addressing climate change will require a comprehensive approach that addresses the root causes of climate change - reducing greenhouse gas emissions - while also providing support and resources to help children and families adapt to its impacts. Given that children are already facing the impacts of climate change, adaptation and resilience measures are needed now to reduce the full force of impacts. This report recommends four areas to do so:

1) Children have continued access to the key services they need: This requires investing in climate-smart and disaster-resilient education, health, and water, sanitation and hygiene (WASH) services for children, so that children can access these services despite the shocks they face;
2) Child protection and social protection systems are in place and are climate-responsive;
3) There is understanding of what to expect and how to adjust as necessary, establishing and utilizing strong early warning, risk management and disaster preparedness systems; and
4) Across all three areas above, children's rights should be at the heart of the response, and their voices and perspectives heard and acted upon by decision makers.

The approaches need to entail forward-thinking, interrelated large-scale systemic reforms, and policy initiatives that utilize the power of innovation and cooperation. But together, they can provide a strong basis for improving children's resilience to the multiple, overlapping shocks associated with climate change and environmental degradation as well as natural hazards.

We need to be guided by children and young people. This is their planet to inherit. They have done least to create the problem – and they will bear 100 per cent of the future impacts. They have the right to be heard, and we have a duty to listen and respond to their calls, including supporting meaningful involvement in climate action. The urgency is requiring them to not wait for adults, but to act themselves, to champion solutions in mitigation, as well as adaptation with creativity and ingenuity. We need to support that process, and provide them with what they need, including the skills and resources to scale the work up. At the very least, we owe them every chance for success.

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[7] IPCC, AR6 Working Group II, Frequently Asked Questions, Key FAQ 3.

Chapter 1
The climate crisis is already here and affecting children's survival, well-being and potential

The climate crisis is already here for the East Asia and Pacific region

The climate crisis is not a distant threat; it is a present-day reality, which has caused devastating impacts on lives and livelihoods and, most importantly, on the lives of children. Average global temperatures have already surpassed 1.1°C above pre-industrial levels, exposing millions of children, particularly among the most disadvantaged communities, to significant and severe threats to their rights and wellbeing.[9]

There has been a significant increase in climate-related extreme weather events in the East Asia and Pacific region, demonstrating that children today are experiencing a more volatile environment than their grandparents.

Over the last 50 years, the East Asia and Pacific Region has witnessed:[9]

- 11x increase in floods
- 4x increase in storms
- 2.4x increase in droughts
- 5x increase in landslides

On average, the climate-related weather events have increased by 6X for the East Asia and Pacific region over the last fifty years.[10]

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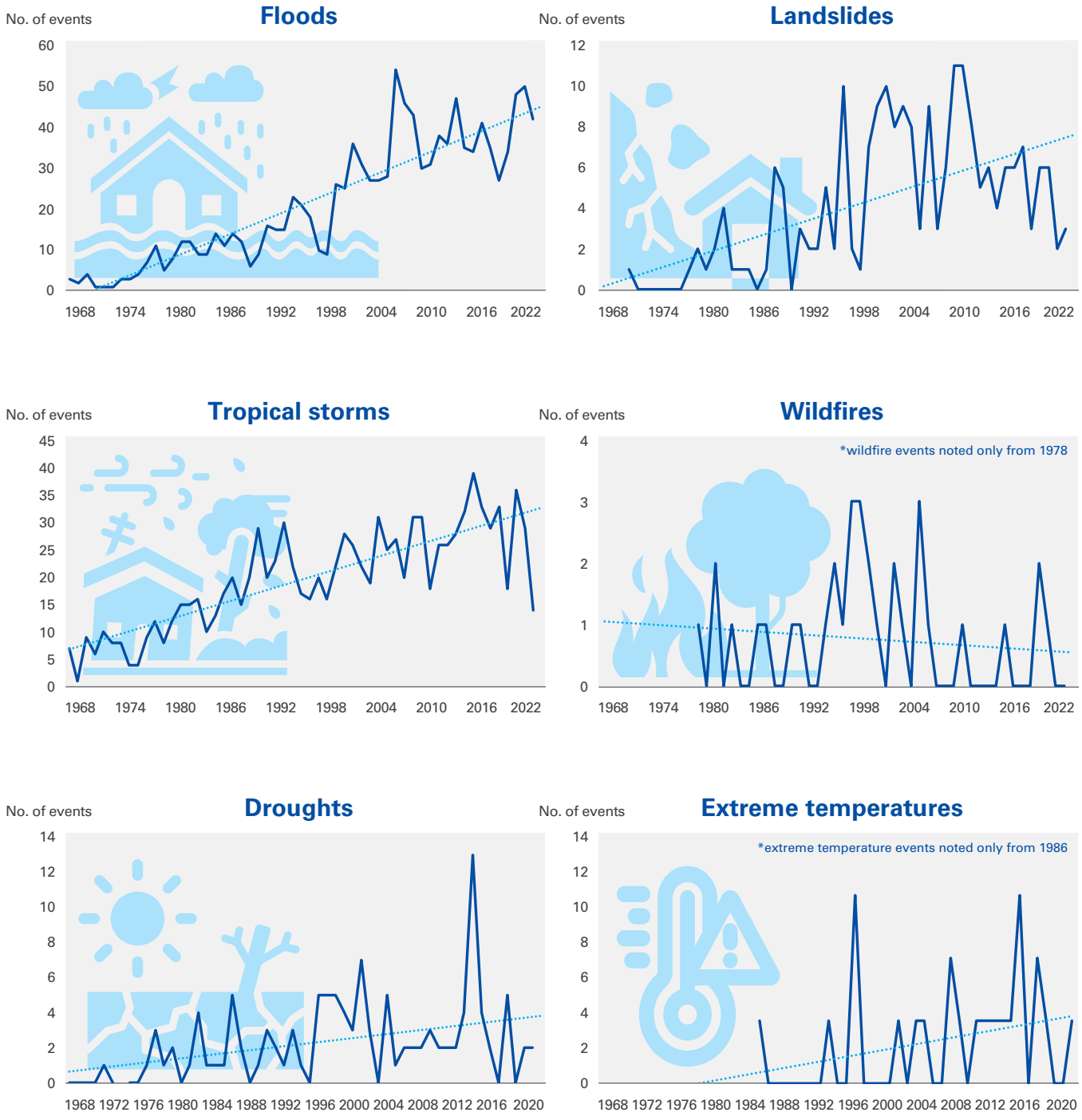
8 IPCC, 'Synthesis Report of the Sixth Assessment Report (AR6)', 2023.

9 Author's calculations based on EMDAT data for 14 Countries. Increases calculated using the 10-year average of the number of events between 1968-1978 and 2012-2022. For full dataset see: EM-DAT: The Emergency Events Database, Centre for Research on the Epidemiology of Disasters (CRED), Université catholique de Louvain, Belgium, accessed April 2023, https://www.emdat.be/.

10 Ibid.

Figure 1. **Key climatological events in East Asia Pacific region in the last 50 years**[11,12]



Source: EM-DAT

On a granular level, there is an increasing trend in the number of floods, tropical storms and landslides, along with a notable emergence of drought, wildfires and extreme temperature events since the 1968-1978 period.[13]

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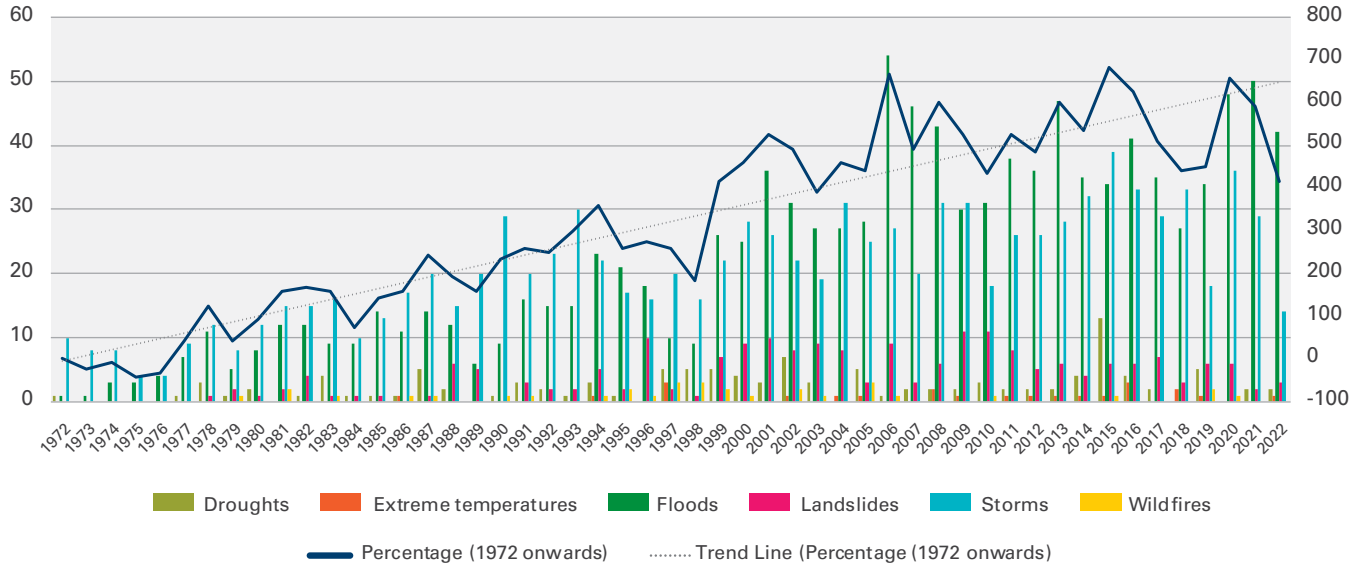
[11] D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: The CRED/OFDA International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium.

[12] Note: Floods constitute coastal flood, riverine flood and flash floods termed as hydrological hazard by EM-DAT; Landslide is termed as hydrological hazard; Extreme temperatures constitute heat wave, cold wave and severe winter conditions termed as meteorological hazard by EM-DAT; Wildfire constitute land and forest fires termed as climatological hazard by EM-DAT; Drought is termed as a climatological hazard; Tropical storm is termed as a meteorological hazard.

[13] EM-DAT: The Emergency Events Database.

Figure 2. Extreme weather events and their percentage increase in the last 50 years[14]



Source: EM-DAT

The staggering increase in extreme weather events underscores the escalating vulnerability of today's children, who confront unparalleled threats to their safety, health, and well-being as a direct result of climate change. We have witnessed these impacts of warming at a 1.1°C temperature increase since the pre-industrial times. Every fraction of a degree can cause significant impacts on Earth and human systems, and the losses and damages will "escalate with every increment" of global temperature rises.[15] Children alive today, who may still be living by 2100, are projected to face four times more climate extremes, even with a slight increase in warming from current levels. If temperatures rise by nearly 2°C more (3.4°F), they could experience five times the number of floods, storms, droughts, and heatwaves compared to the current levels.[16]

The East Asia and Pacific region's unique geography, with many countries located along continental arcs and offshore archipelagos, places more people at risk than any other region in the world. The Pacific Island Countries (PICs) are hotspots for cyclones, rising sea levels, ocean acidification and coral bleaching. Some of the PICs are also only a few metres above the sea level and more than half the population live within 1.5 kilometres of the shore. A sea level increase of as little as half a metre, along with increased incidents of storm surges, would threaten livelihoods and destroy infrastructures, amplifying the magnitude of the disasters already prevalent in the region.[17]

Marine ecosystems are critical to the functioning of many coastal communities across the East Asia and Pacific region. However, up to 50 per cent of the coral reef in Indonesia, 40 per cent in the Philippines, and 20 per cent in Malaysia has already been destroyed. In Papua New Guinea, up to 60 per cent is at risk of being lost due to human activities.[18] This coral bleaching is damaging marine ecosystems and threatening fisheries and livelihoods of many coastal communities.

In other parts of the East Asia and the Pacific, heatwaves, droughts, floods, and tropical cyclones have become more intense and frequent, causing extensive damage to property, assets, and human life. In the Philippines, Typhoon Goni, which hit the country in 2020, was one of the strongest tropical cyclones on record, and affected over 700,000 children and 69 million people.[19] The storm caused widespread devastation, with torrential rainfall, flooding, landslides, and high winds damaging homes, infrastructure, and agricultural lands. The impacts on children were significant, as the typhoon disrupted access to essential services such as health care, clean water, and education. Many schools were damaged or destroyed, and thousands of children were displaced from their homes. Additionally, the 2022 landslides in Batang Kali, Malaysia where 33 people (including five children) died, paints another sad picture of impacts due to climate-induced disasters.[20]

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14 D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: The CRED/OFDA International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium.
15 Ibid.
16 Climate Analytics, 'Report: Climate Change Impacts on Children', 2019, accessed March 2023.
17 UCAR Center for Science Education, 'Rising Sea Level', n.d., accessed March 2023, https://scied.ucar.edu/learning-zone/climate-change-impacts/rising-sea-level.
18 World Resources Institute, 'Reefs at Risk Revisited in the Coral Triangle', 2012.
19 UNICEF, 'Over 700,000 children among the most affected'.
20 EM-DAT: The Emergency Events Database.

Another stark example is the 2020 floods in central Viet Nam, which affected 1.5 million people, including approximately 160,000 children.[21] The heavy rainfall, intensified by climate change, resulted in extensive damage to homes, health and education infrastructures, and crops, leaving mothers and children unable to access essential services. Moreover, the destruction of water and sanitation facilities exposed children to increased risks of water-borne diseases, threatening their health and well-being.

The region also faces very high levels of agricultural burning and wildfires, which is considerably affecting air quality, including in densely populated cities. In Thailand, wildfires in the north are becoming more frequent and severe – in 2019 more than 40,000 hotspots were detected in the first five months of the year.[22] In the Philippines that same year, 17,000 hectares of land was burned for agriculture and logging, creating new risks for indigenous groups.[23] And in Indonesia, during the dry season when farmers use fire to clear land for agriculture, widespread air pollution causes considerable health problems as well as economic losses.[24]

Other extreme events include heavy precipitations events and tropical monsoons, with flooding a regular occurrence. Thailand is prone to seasonal flooding, particularly in its Chao Phraya River basin, as evidenced by the 2011 floods that caused significant economic losses and death.[25] Indonesia, being highly vulnerable to sea-level rise also faces major threat, with most of its population inhabiting in the lower elevation coastal zone. Without adaptation, the country's population is likely to be exposed to permanent flooding impacts by 2070 – 2100.[26] In the lower Mekong Delta, much of the region is less than two metres above sea level – climate change will significantly affect the liveability of much of that region, causing saltwater intrusion, which has consequences for food security and contributes to malnutrition: 25 per cent of children under 5 in the Mekong Delta already suffer from stunting. Moreover, the combination of climate change, environmental degradation and pollution, and large-scale infrastructure is threatening ecosystems and water availability. Between 40-80 per cent of fish and aquatic life is at risk, and an estimated 37,000 tonnes of plastic pours out of the Mekong Delta each year, making the Mekong a top marine plastic polluter.[27, 28]


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[21] Ibid.
[22] Mongabay.com, 'Northern Thailand Burns During Severe Wildfire Season', April 2019.
[23] Almendral, Aurora, 'In the Philippines, Fires Pose New Threats to Indigenous People', *The New York Times,* April 2019.
[24] Renaldi, Adi, 'Indonesia's forest fires threaten health and economy', Al Jazeera, September 2019.
[25] PreventionWeb, 'Bangkok: Sinking City Faces Severe Climate Challenges', 5 March 2018, www.preventionweb.net/news/bangkok-sinking-city-faces-severe-climate-challenges.
[26] PreventionWeb, 'Climate Risk Country Profile: Indonesia', 2021, www.preventionweb.net/publication/climate-risk-country-profile-indonesia.
[27] Mendrik, F., Parsons, D., Hackney, C., Waller, C., & Vasilopoulos, G, 'The ecological fate of microplastics in delta and marine environments in South-East Asia', *Science of the Total Environment,* 786, 147306, 2021.
[28] MRC, Catch and Culture Environment, 'Fisheries and Environment Research and Development in the Mekong Region', vol. 24, no. 1, April 2018, retrieved from https://www.mrcmekong.org/assets/Uploads/CC-24-2.pdf.

PHILIPPINES

TYPHOON GONI (2020)

- One of the strongest tropical cyclones on record
- Affected over 700,000 children & 69 million people

IMPACTS

Widespread devastation, with torrential rainfall, flooding, landslides, and high winds damaging homes, infrastructure, and agricultural lands.

The impacts on children were significant

- The typhoon disrupted access to essential services such as health care, clean water, and education.
- Many schools were damaged or destroyed, and thousands of children were displaced from their homes.

CENTRAL VIET NAM

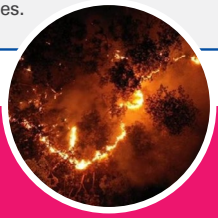
2020 FLOODS

Affected 1.5 million people, including approximately 160,000 children (EMDAT 2020; UNICEF, 2020).

IMPACTS

Extensive damage to homes, health and education infrastructures and crops, leaving mothers and children unable to access essential services.

Destruction of water and sanitation facilities exposed children to increased risks of waterborne diseases, threatening their health and well-being.



SOUTHEAST ASIA

WILDFIRES (2019)

- In Northern Thailand, wildfires have become more frequent and severe – in 2019 more than 40,000 hotspots were detected in the first five months of the year.
- In the Philippines, 17,000 hectares of land was burned for agriculture and logging, creating new risks for indigenous groups.
- In Indonesia, during the dry season when farmers continue to use fire to clear land for agriculture, widespread air pollution.

IMPACTS

Considerable health problems as well as economic losses.

GREATER MEKONG REGION

COASTAL FLOODING

- Thailand is prone to seasonal flooding, particularly in its Chao Phraya river basin as evidenced by the 2011 floods (UNDRR, 2019).
- Indonesia is ranked fifth highest globally in terms of population inhabiting the lower elevation coastal zone (GFDRR, 2020).
- In the lower Mekong Delta, much of the region is less than two metres above sea level, causing saltwater intrusion.

IMPACTS

Food insecurity leading to malnutrition – 25 per cent of children under 5 in the Mekong Delta suffering from stunting (World Bank, 2016).

The combination of climate change, environmental degradation and pollution, and large-scale infrastructure is threatening ecosystems and water availability. Between 40-80 per cent of fish and aquatic life is at risk, and an estimated 37,000 tonnes of plastic pours out of the Mekong Delta each year, making the Mekong a top marine plastic polluter.

These events serve as a powerful reminder that the impacts of climate change are not just a distant concern for future generations, but are already causing immense suffering and loss for millions of people, including the most vulnerable among us, such as children.

Today, the East Asia and Pacific region is the hardest hit area globally from climate and environmental hazards, shocks and stresses. Twelve out of the 14 countries in the CCRI are at an extremely high risk within the sub-component score on Climate and Environmental Hazards, Shocks and Stresses.[29]

New UNICEF analysis from the CCRI reveals that, currently, in the East Asia and Pacific region:

Over 140 million children are highly exposed to water scarcity

Over 120 million children are highly exposed to coastal flooding

Nearly 210 million children are highly exposed to cyclones

Over 460 million children are highly exposed to air pollution

[29] UNICEF, 'The Climate Crisis is a Child's Rights Crisis', See Pillar 1, Climate and Environmental Hazards, Shocks and Stresses of the Children's Climate Risk Index, 2021.

Table 1. Number of children highly exposed to various climate and environmental shocks, stresses and hazards in the East Asia and Pacific Region

Countries	Highly exposed to water scarcity	Highly exposed to riverine flooding	Highly exposed to coastal flooding	Highly exposed to cyclones	Highly exposed to heatwaves	Highly exposed to pollution		
						Highl exposed to air pollution (PM2.5)	Highly exposed to lead pollution	Highly exposed to pesticides
Cambodia	110,000	2,860,000	290,000	880,000	220,000	5,990,000	3,170,000	4,500,000
China	110,590,000	44,530,000	43,190,000	137,840,000	200,880,000	289,320,000	31,200,000	271,230,000
Democratic People's Republic of Korea	3,750,000	900,000	1,160,000	6,130,000	2,460,000	6,050,000	4,880,000	5,470,000
Indonesia	3,490,000	6,970,000	28,310,000	2,210,000	15,180,000	74,050,000	8,270,000	10,000
Lao People's Democratic Republic	390,000	1,020,000	170,000	2,390,000	2,150,000	2,810,000	580,000	50,000
Malaysia	180,000	1,170,000	790,000	N/A	1,160,000	8,110,000	60,000	6,930,000
Mongolia	1,000,000	90,000	N/A	N/A	1,100,000	260,000	140,000	N/A
Myanmar	610,000	4,510,000	5,780,000	4,390,000	2,290,000	17,190,000	4,700,000	8,580,000
Papua New Guinea	N/A	210,000	530,000	20,000	170,000	110,000	100,000	N/A
Philippines	13,690,000	5,660,000	18,780,000	37,420,000	6,080,000	17,880,000	20,020,000	24,450,000
Solomon Islands	N/A	N/A	270,000	220,000	N/A	N/A	100,000	N/A
Thailand	6,140,000	2,860,000	1,830,000	2,420,000	5,900,000	13,570,000	130,000	5,730,000
Viet Nam	1,970,000	11,680,000	19,620,000	15,960,000	5,740,000	25,760,000	3,240,000	16,940,000
TOTAL	**141,920,000**	**82,460,000**	**120,720,000**	**209,880,000**	**243,330,000**	**461,100,000**	**76,590,000**	**343,890,000**

Note: Based on the UNICEF Children's Climate Risk Index (CCRI); N/A implies either a lack of available data or not applicable.

Understanding future impacts in the region[30]

The Intergovernmental Panel on Climate Change (IPCC) on the Sixth Assessment Report (AR6) considers various climate regions within East Asia and Pacific: Eastern Central Asia (ECA) for Mongolia; Southeast Asia (SEA) for Cambodia, Indonesia, Lao PDR Malaysia, Papua New Guinea, Philippines, Timor-Leste, Thailand, Viet Nam; and South Pacific Ocean (SPO) for Fiji, Kiribati, Solomon Islands, Vanuatu.

The AR6 confirms with high confidence for this region:

- Precipitation will increase in frequency and intensity (EAP) with daily precipitation extremes increasing (ECA).
- Higher flood levels and prolonged inundation in the Mekong Delta due to compounds impacts of climate change, land subsidence, and local human activities (SEA).
- Observed monsoon precipitation decreased in the second half of the 20th century (SEA).
- Observed mean surface temperature has emerged out of the range of internal variability. The trends in the increase of heat extremes and decrease in cold extremes will continue over the coming decades.
- Marine heatwaves have become more frequent and will continue to increase.
- Pacific countries warming will continue in the 21st century for all global warming levels and future emissions scenarios, further increasing heat extremes and stress.
- SIDS is increasingly affected by spatial and seasonal variations in trends with temperature increases, ocean acidification, coral bleaching, invasive species, changing precipitation patterns, fewer but more intense tropical cyclones, storm surges, and droughts.
- Mean surface wind speeds have decreased and will continue to decrease.
- Relative sea level has increased faster than the global average with coastal area loss. It is virtually certain that the global mean sea level will continue to rise in response to the continued warming of the climate system, and this rise will continue for centuries to millennia due to continuing deep ocean heat uptake and mass loss from ice sheets.

Source: The Intergovernmental Panel on Climate Change (IPCC), Sixth Assessment Report (AR6)

[30] https://www.ipcc.ch/report/sixth-assessment-report-cycle/

This is creating a child rights crisis[31]

Through its far-reaching impact on all parts of society, climate change will challenge the very essence of children's rights to survival, good health, wellbeing, education, and nutrition, as enshrined by the Convention on the Rights of the Child and in the UN Sustainable Development Goals. Climate change threatens to exaggerate the vulnerabilities of children and other populations at risk, and could substantially hamper future progress, and possibly even reverse the improvements made in child survival and wellbeing during recent decades.

The climate crisis affects and undermines the effective enjoyment of the rights enshrined in the Convention on the Rights of the Child, to which all 196 eligible State parties have signed (except the United States), including:

- **Article 3:** The best interests of the child must be a top priority. Climate change works in opposition to the best interests of children, especially in vulnerable countries.
- **Article 6:** Right to survival and development. Climate change directly threatens the survival and development of children, through increased risk of droughts, floods, disease and hunger.
- **Article 9-10:** Family relations are not to be separated from one's parents against one's will. Climate change stands to displace millions of children living in vulnerable places, including forcing children to move across and within national boundaries.
- **Article 12:** Right to voice. Children have a right to have their voices heard on issues that affect them. Climate change will affect future generations more than anyone. Limiting their opportunity to have a say on the ambition of climate action at local, national and international levels inhibits this right.
- **Article 24:** Right to health. The bulk of global burden of disease associated with climate change affects children, especially young children. Climate change can also damage or disrupt access to essential health services and clinics.
- **Article 27:** Right to adequate standard of living. Rising sea levels, storms and floods threaten to destroy housing and create unsafe living conditions for children.
- **Article 28:** Right to education. Children are kept out of, or away from, school due to climate change-related disasters, such as floods, storms or droughts.
- **Articles 19, 32 and 34-36:** Right to freedom from any form of violence or exploitation. Climate change increases the risks of violence and exploitation, especially when children and their families are displaced. This can also increase risks of abduction and trafficking.
- **Article 30:** Right to indigenous culture and language. Climate change threatens ecosystems which are intrinsically linked with indigenous culture and language.
- **Article 31:** Right to recreation and play. Climate change stands to threaten the ability of children to access safe spaces for recreation and play, including through destruction or damage of schools, as well as community spaces.

Because of the inter-connected and inter-related nature of rights, the realization of one right often depends, wholly or in part, upon the realization of others. The violation of one right often reinforces or leads to the violation of another. As a result, virtually all children's rights may be affected by the climate crisis, potentially impacting the effective implementation of the Convention on the Rights of the Child as a whole. The Committee on the Rights of the Child has identified climate change as one of the biggest threats to children's health, and has urged State parties to put children's health concerns at the centre of their climate change adaptation and mitigation strategies. It has emphasized that States have a responsibility to protect children from environmental harms.

[31] This section extracted from: UNICEF 2021, 'The Climate Crisis is a Child's Rights Crisis'.

Future climate impacts will be an immense challenge

The recent assessment report of the IPCC contains sobering predictions of the world that the region's children and young people will inherit, and serves as a stark reminder of the narrowing window for meaningful climate action. It demonstrates that today's children will face increasingly severe and uncontrollable extreme weather events in their future, which will have significant repercussions on their quality of life, health, well-being, and security. The interconnectedness of the IPCC's findings with the challenges faced by children underscores the urgent need to address climate change in order to protect their futures. Children aged 10 or younger in the year 2020 are projected to experience a nearly four-fold increase in extreme events under 1.5°C (most optimistic scenario) of global warming by 2100, and a five-fold increase under 3°C warming (dangerous scenario). Such increases in exposure would not be experienced by a person aged 55 in the year 2020 in their remaining lifetime under any IPCC warming scenario.[32]

The IPCC states that in East Asia particularly, climate change will amplify the urban heat-island effect across Asian cities at 1.5°C and 2°C temperature rise. Projections show that floods will become more frequent while monsoons become shorter but more intense. Droughts and temperatures in the dry season will increase, as well as the intensity of storms. Depending on the projected scenario, the sea level will rise up to 82 cm by 2050 and up to 98 cm by 2100.[33] More strikingly, sea level rises are happening faster in some parts of the Pacific region compared to the global average.

As the magnitude of extreme weather events and long-term changes intensifies under climate change, so will the impacts experienced by children. These changes will cause extensive direct and indirect harm to children all around the world, particularly in regions more exposed and less able to withstand the associated effects, which are predicted to include rising sea-levels threatening land and coastal infrastructure, extreme weather (including intense storms), pressure on water and food production systems, population displacement, heightened risks of pests and diseases, greater political instability, and many more.

Understanding the full set of climate impacts is complex because there are both slow-onset and rapid-onset risks, which can exacerbate each other, and are intricately linked to other non-climatic factors affecting children and adolescents. On the one hand, slow-onset events like gradually increasing temperatures, changing rainfall patterns, sea level rise and salinization are already affecting the water availability, nutrition of children, and infectious disease patterns – such as increasing incidences of serious diseases like malaria and dengue among children. On the other hand, abrupt events like floods and storms that are intensified by climate change disproportionately affect children (even more those children under the age of 5) and adolescents, especially the poorest and most vulnerable who are already suffering from multiple deprivations. And both forces can intersect with each other.

An injustice on many fronts

This is an injustice to children on many fronts:

a) they did least to cause this crisis;
b) they will bear the brunt of the impacts; and
c) they will shoulder the responsibility of the solution.

According to the International Energy Agency (IEA), achieving carbon neutrality by 2050 means significantly reducing the carbon footprints of future generations. By comparing the carbon emissions of different generations, the analysis also reveals that individuals born in the 1950s could emit around 350 tonnes of CO_2 throughout their lives if net zero is achieved, whereas children born today would emit just 34 tonnes in the same scenario – implying that the grandparents emit 10 times more than babies born today.

The generational gap in carbon footprints would be even larger in advanced economies like North America and Europe. This is due to the historical higher carbon emissions of these economies compared to less developed ones. For instance, individuals born in the 1950s in the United States or European Union could have carbon footprints that are 15 times larger than those of their descendants born in the 2020s.[34]

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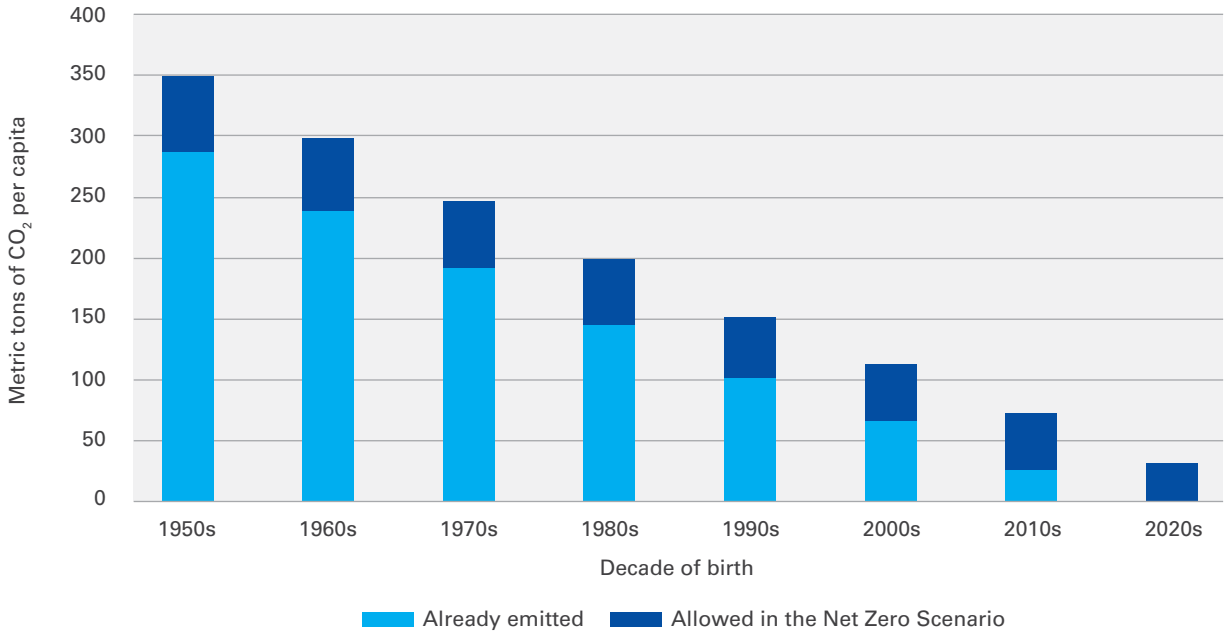
[32] IPCC, 'AR6 Working Group II Frequently Asked Questions (FAQs)', accessed March 2023, https://www.ipcc.ch/report/ar6/wg2/about/frequently-asked-questions/keyfaq3/.
[33] IPCC, 'AR6 Working Group II Chapter 10: Asia', accessed February 2023, https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter10.pdf.
[34] IEA (2022), What would net zero by 2050 mean for the emissions footprints of younger people versus their parents?, IEA, Paris.

The implications of such reductions in emissions means that children would require significant lifestyle adjustments. Also, the burden of reducing emissions may not be evenly distributed. Children from poorer backgrounds may struggle to access sustainable resources, technologies, and educational opportunities, widening the gap between a rich and poor child, a topic we will explore in a later chapter. This highlights the urgent need for climate action and intergenerational responsibility in reducing emissions, as today's young people will not have the same luxury of unmitigated emissions enjoyed by older generations.

Figure 3. Younger generations will have a lower lifetime carbon budget.[35] Global average lifetime CO_2 emissions per capita by decade of birth in the Net Zero Scenario, 1950s-2020s



Source: IEA 2022

A turning point for climate justice

In March 2023, Vanuatu, through the support of a "core group" of 17 countries, won a major victory to advance international climate law as it persuaded the United Nations General Assembly to ask the world's highest international court (the International Court of Justice) to rule on the obligations of countries to address climate change. A UN resolution was adopted to hold polluting countries legally accountable for failing to tackle the climate emergency. The resolution was co-sponsored by 120 countries.

The court ruling resulting from this advisory opinion will have significant implications for children worldwide. By clarifying the legal obligations of states concerning climate change, the ruling will provide a foundation for stronger climate action and policies that protect the rights and well-being of children, particularly those in vulnerable communities. With a clear understanding of their responsibilities, countries can develop and implement measures that reduce the adverse impacts of climate change on children's health, education, and overall quality of life. Furthermore, the ruling will underscore the importance of intergenerational equity, ensuring that present actions do not compromise the future of the world's children. The unanimous support for this resolution highlights the global commitment to address climate change and its consequences on children, paving the way for a more equitable and sustainable future for all.

[35] Ibid.

Chapter 2
Multiple overlapping shocks, stresses and hazards create cascading impacts

New UNICEF analysis reveals that across the East Asia Pacific region, **443 million children** face more than three or more different types of shocks or stresses; **325 million children** four or more different types of shocks or stresses; **204 million children** face five or more different types of shocks or stresses; and **64 million children** face six or more different types of shocks or stresses. This is out of the approximately 500 million children represented in these countries in the East Asia and Pacific Region.

The East Asia and Pacific region has the highest proportion of children facing multiple overlapping shocks:

- 89 per cent of children in EAP face three or more types of shocks, compared to the global average of 73 per cent
- 65 per cent of children in EAP face four or more types of shocks, compared to the global average of 37 per cent
- 41 per cent of children in EAP face five or more types of shocks, compared to the global average of 14 per cent
- 12 per cent of children in EAP face six or more types of shocks, compared to the global average of 3 per cent

Figure 4. **Proportion of children facing multiple overlapping climate and environmental shocks, by region**

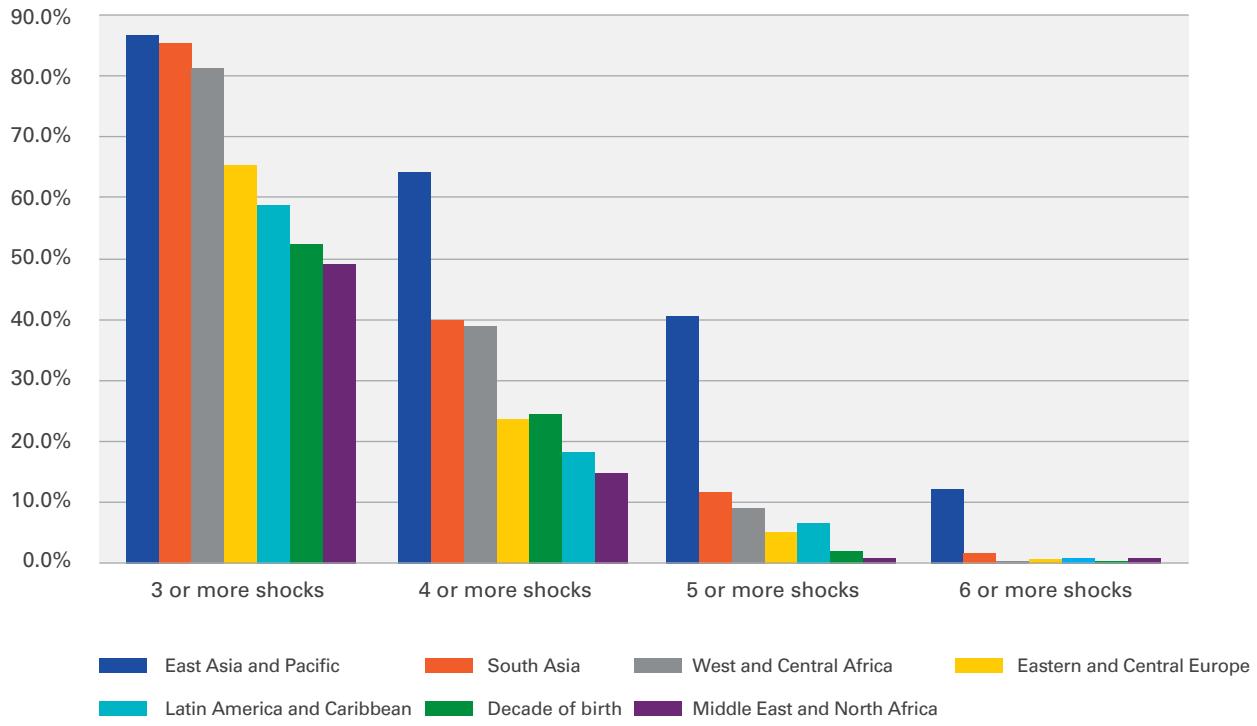
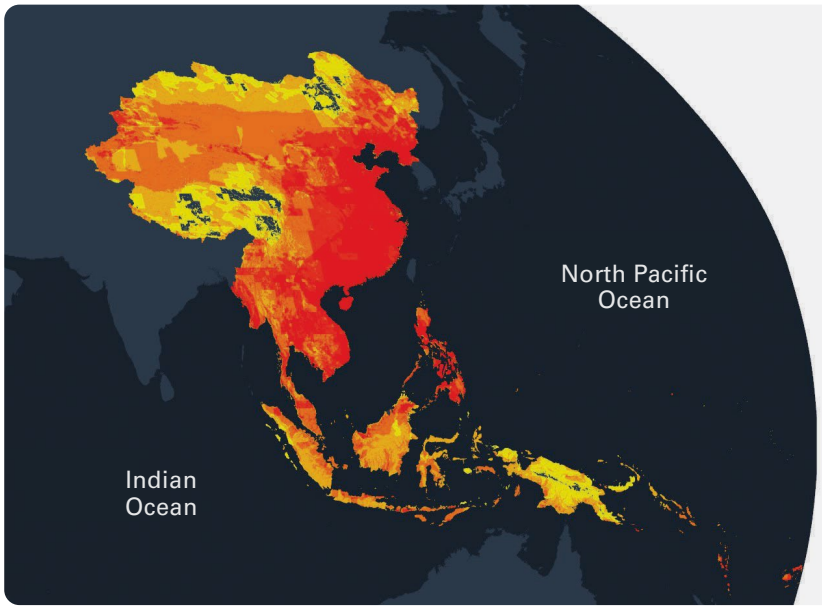


Figure 5. **Multiple, overlapping climate and environmental hazards: coastal flooding, water scarcity, heatwaves, air pollution, riverine flooding and tropical cyclones, vector-borne diseases**



Number of hazards, shocks or stresses

- Extremely high (≥5)
- High (4)
- Medium-high (3)
- Low-medium (2)
- Low (1)

Source: This map combines data from: the World Resources Institute (WRI); United Nations Environment (UNEP); The Global Assessment Report, UNDRR; The Center for International Earth Science Information Network (CIESIN); The Malaria Atlas Project; Messina et al.; Kraemer et al.; The Climate Research Unit, University of East Anglia; The Atmospheric Composition Analysis Group; and UN World Population Prospects (2019 revision). See methodology in UNICEF 2021' The Climate Crisis is a Child's Rights Crisis' for full details.

Being faced with multiple types of climate and environmental shocks, hazards and stresses creates conditions for multiplier effects through connections between each other, through interactions with other non-climate shocks like the COVID-19 pandemic, conflict and cost-of-living crises, and through feedback loops that increase the frequency and severity of the shocks to begin with. All of this erodes the capacity of people to respond to the combinations of all those shocks.

Table 2. **Proportion of children facing multiple, overlapping types of climate and environmental shocks, hazards and stresses by country**

Countries Note: This only includes countries included in the CCRI, for which data was available	**1 or more types of shock, hazard or stress**	**2 or more types of shock, hazard or stress**	**3 or more types of shock, hazard or stress**	**4 or more types of shock, hazard or stress**	**5 or more types of shock, hazard or stress**
Cambodia	99.9%	99.8%	93.6%	49.1%	2.8%
China	99.9%	99.5%	96.8%	80.8%	55.7%
Democratic People's Republic of Korea	99.9%	99.9%	99.8%	97.6%	81.6%
Indonesia	99.7%	96.6%	53.6%	6.4%	0.0%
Lao People's Democratic Republic	99.9%	99.9%	98.6%	84.5%	32.9%
Malaysia	99.9%	97.3%	84.5%	20.3%	2.6%
Mongolia	99.5%	90.1%	25.2%	4.4%	0.0%
Myanmar	99.9%	99.9%	91.2%	46.1%	11.5%
Papua New Guinea	86.1%	27.2%	2.6%	0.3%	0.0%
Philippines	99.9%	99.9%	96.8%	77.0%	38.3%
Solomon Islands	99.9%	96.5%	76.4%	0.0%	0.0%
Thailand	99.9%	99.7%	93.9%	57.8%	24.5%
Viet Nam	99.9%	99.9%	99.5%	94.6%	56.8%

Note: It is important to explain that a country that is exposed to multiple and different types of shocks does not mean that the country does not face severe levels of climate and environmental peril. Risk is defined as a combination of hazard, exposure, vulnerability and capacity to respond, and there are many factors that can affect risk. Moreover, this analysis is only considering the diversity of exposure, not the magnitude of exposure, or the degree to which there are repeated shocks of the same type. Countries facing multiple of the same types of shock may be equally challenged in terms of exposure to climate risk, yet that would not be reflected here.

Climate hazards interact with each other, as well as non-climate shocks, creating a multiplier effect

Climate change is increasing the severity of many sudden-onset hazards, such as floods, droughts, cyclones and bushfires. The recurrent climate hazards, shocks and stresses do not have isolated impacts – they have cascading effects on a host of other risks. Droughts, floods and severe weather, coupled with other environmental stresses, compound one another. For instance, cyclones can result in heavy rainfall and strong winds, causing floods that damage infrastructure and properties. These floods can then trigger landslides due to soil erosion, which can cause further destruction and loss of life. Additionally, droughts can lead to wildfires, which can increase emissions and worsen air pollution, further intensifying the effects of climate change.

Regarding temperature change, warmer air holds more moisture, which then increases the likelihood of more rainfall. Likewise, a storm surge combined with sea level rises, for example, can create considerably worse impacts in terms of damage to coastal regions; similarly, soil pollution combined with flooding can cause contamination of key water sources such as rivers and lakes.

As the frequency of these hazards increases, the likelihood of hazards striking simultaneously and in closer succession will grow, as will opportunities for cascading impacts.[36] The consequences of the 2011 floods in Thailand were enormous, which lasted more than three months and caused economic losses estimated at more than US$40 billion.[37] When Typhoon Parma hit the Philippines in 2009, it was accompanied with another associated hazard – floods, which killed nearly 512 people and caused economic losses of US$798 million. Subsequently, in close succession, Typhoon Ketsana hit the country during the same year, causing torrential rainfall and further flooding, compounding the damage caused by Parma. Aside from killing an additional 500 people, there were economic losses of $US323 million, creating a multiplier effect that exacerbated the impacts of each hazard.[38]

Secondary multiplier effects are created when hazards meet different vulnerabilities in social, economic, human and ecological systems that are interconnected.[39] Floods, for example, can increase water-related infectious diseases such as diarrhoea, caused by water contamination and damage to water systems. Floods and cyclones also increase the number of breeding sites for mosquito vectors and facilitate the transmission of diseases such as malaria and dengue. Additionally, warmer weather expands the geographic range of disease-carrying mosquitoes.

The floods in Viet Nam (as a result of multiple typhoons and tropical depression) in 2016 paints a picture of this multiplier effect. Stagnant water in puddles and containers, combined with warmer temperatures, provided ideal environments for mosquitos to breed, leading to an increase in disease transmission. Following the floods, the country reported a notable upsurge in the number of dengue fever and malaria cases. According to the World Health Organization (WHO), the dengue cases increased by over 75 per cent in 2016 compared to the previous year, with more than 122,000 cases and 43 deaths.[40]

Likewise, the aforementioned Philippines typhoons and floods further triggered devastating landslides and mudslides, which damaged homes, infrastructure, and crops, exacerbating the impact of the storms. It also caused severe soil erosion, which made it more difficult for farmers in the affected areas to grow crops and support their livelihoods. In 2022, the country has endured 16 severe storms that destroyed more than US$225 million worth of agricultural land. Additionally, the Philippines, as a food importer, depends on rice and all cereals such as wheat to feed its growing population. But food insecurity has grown, as a result of the increasing price of food, fuel and fertilizer due to a wide range of geopolitical stresses. This, in turn, led to longer-term impacts on food security and economic development in the region.[41]

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36 36 Settele, J., Shugart, H., & Lo, Y, 'Climate Change and Children's Health: A Call for Environmental Management', I*nternational Journal of Environmental Research and Public Health*, 17(18), 6647, 2020, https://doi.org/10.1007/s13753-020-00248-z.

37 EM-DAT: The Emergency Events Database.

38 Ibid.

39 UNDRR, 'Scoping Study on Compound, Cascading and Systemic Risks in Asia-Pacific', 2021, https://www.undrr.org/publication/scoping-study-compound-cascading-and-systemic-risks-asia-pacific.

40 Herriman, Robert, 'Dengue Fever: Vietnam Reports 25 Percent Increase in 2016', Outbreak News Today, 16 February 2017, http://outbreaknewstoday.com/dengue-fever-vietnam-reports-25-percent-increase-2016/.

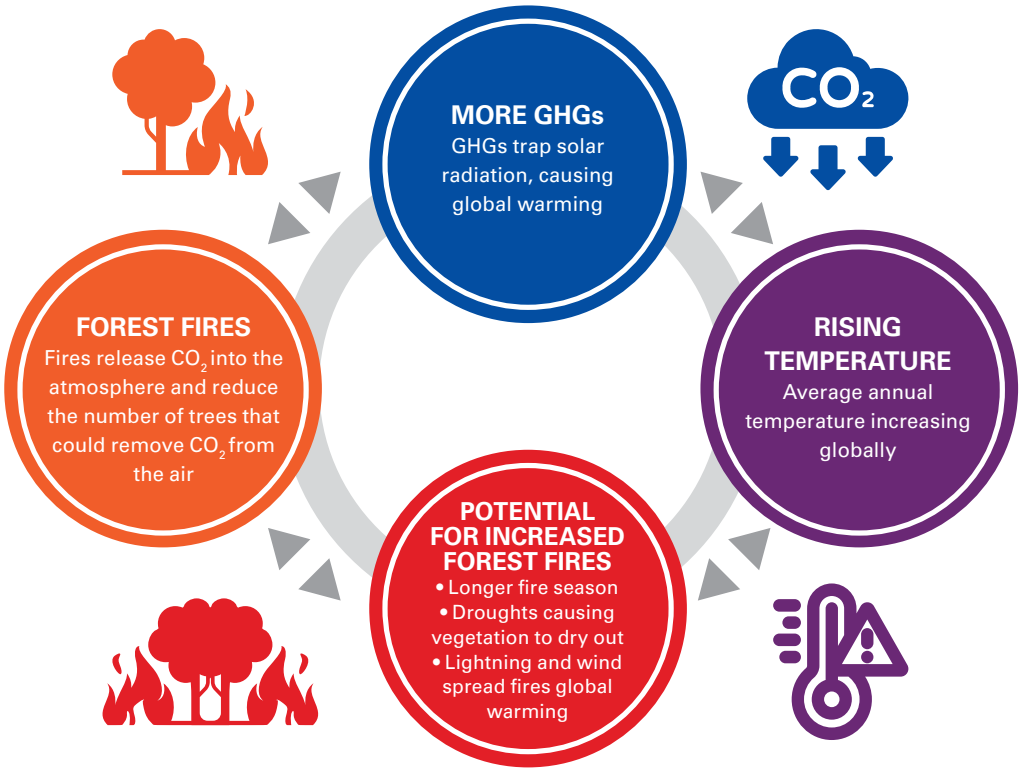
41 BBC News, 'Vietnam: Floods and Landslides Kill at Least 50', 2021, www.bbc.com/news/world-asia-64053059.

Other human-driven trends amplify these effects, leading to more shocks, thus creating knock-on effects on several interconnected systems and sectors. For example, increased urbanization results in more people living in overcrowded and unsanitary conditions, while greater human-animal contact and air pollution creates more opportunities for disease transmission.[42] While it could be difficult to take account of how multiple hazards can trigger other hazards in the region and cause cascading impacts and response in the human and environmental systems, the risks imposed by climate on energy, food, and water overlap spatially and temporally, creating new and worsening current hazards, exposures, and vulnerabilities that will affect increasing number of people and regions.[43]

Feedback loops further drive the magnitude of shocks

The cascading and residual shocks can often create feedback loops, which further drive the magnitude of climate and environmental shocks. As the frequency of the climate hazards increase, so will the likelihood of interrelated shocks that create compounding impacts that trigger a series of feedback loops. A good example of this can be demonstrated by a situation when there is a loss of vegetation due to drought and forest fires, which lead to soil erosion and reduces the land's ability to absorb water. This situation in effect can increase the risk of flooding, at the same time increasing the risk of reducing the land's ability to support vegetation. Consequently, this also increases the risk of drought and forest fires. Another example of the feedback loop is the 2019 drought in China's Yunnan province, one of the main agricultural regions of the country. The drought led to significant crop losses, limiting of drinking water, as well as a decline in hydroelectricity, the major source of energy in the region. Indirectly, the decline in hydropower generation also led to a rise in coal consumption.[44]

Figure 6. Cyclical nature of climate-induced hazards

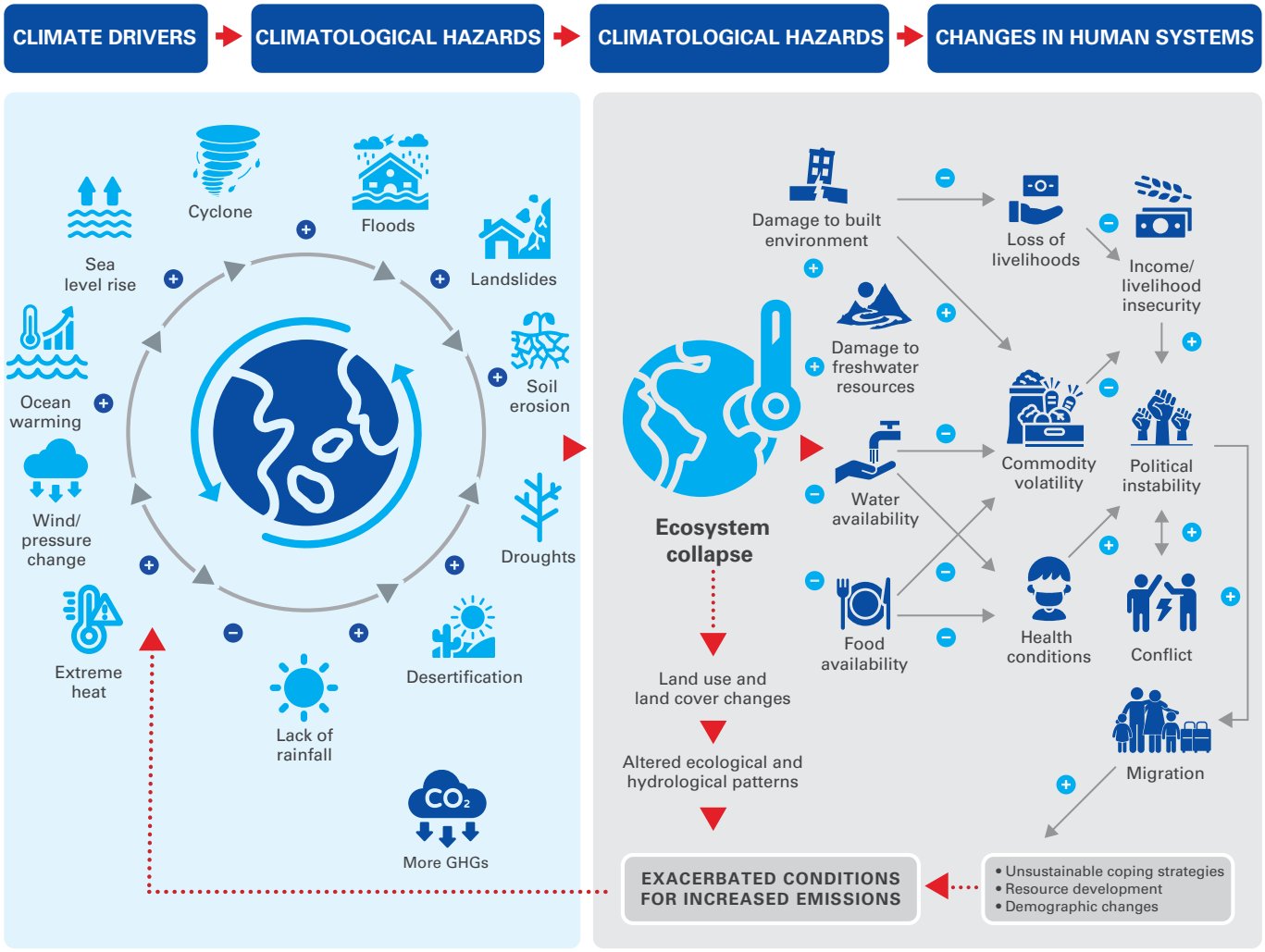


[42] UNDP, 'Polycrisis and Long-Term Thinking: A New Developmentalism for Asia and the Pacific', 2022, www.undp.org/sites/g/files/zskgke326/files/2022-09/UNDP-RBAP-POLYCRISIS-AND-LONG-TERM-THINKING-2022.pdf.

[43] Hijioka, Y., Kainuma, M., and Fujino, J, 'Estimated Impact of Climate Change on Children's Health Using Representative Concentration Pathways', *International Journal of Environmental Research and Public Health*, 17(14), 5210, 2020, https://doi.org/10.1007/s13753-020-00248-z.

[44] PreventionWeb, 'Drought Dries Yangtze River, China Loses Hydropower', 2011, Retrieved from www.preventionweb.net/news/drought-dries-yangtze-river-china-loses-hydropower.

Figure 7. Example of a climate feedback loop



Note: Illustration based on authors assessment to demonstrate feedback loops, not meant to be exhaustive of the full range of factors that could be affected by hazards

A polycrisis in the making

Polycrisis: the presence of multiple near-simultaneous shocks, with strong interdependencies among them, taking place in an ever-more integrated world.[45]

–World Economic Forum (2023)

The effects of climatological hazards and their interactions with the existing socio-economic and ecological conditions are reshaping the risk landscape of the East Asia Pacific, making it ever more complex. These climate hazards do not only exacerbate each other, but also stretch the planetary boundaries, push poverty levels, catalyse social tensions and increase inequality that lead to complex problems. Climate change increases risks and adds significant complexity and volatility, with impacts across multiple social and economic dimensions becoming more difficult to predict and track.[46] Unlike a single direct shock or trend, climate risks are diffuse and indirect, with long-term multidimensional impacts. COVID-19 represents an example of the wide-ranging impacts that large shocks can have when complex risks materialize, with repercussions far and beyond the public health sector, such as profound disruptions to daily life, livelihoods, and employment globally.

Children are not spared from the aforementioned effects. In fact, the shocks and stresses have altered children's lives. From attempts to recoup pandemic-induced losses in child development and education, to the rising child malnutrition and record numbers of children in humanitarian need, to young people's protest movements around the globe, children face new and emerging trials that go beyond climate-related challenges. For example, global food and nutrition insecurity has been on the rise in the past several years, due in large part to extreme weather events and, more recently, supply chain bottlenecks lingering from the pandemic, as well as other global conflicts. These interrelated shocks have created considerable knock-on effects on import-dependent countries, preventing families around the world from providing nutritious food for their children. Complex systems interact with each other in continuous, multidimensional ways, making them unpredictable and prone to shocks, or unexpected events with severe impacts.[47] One risk will impact and exacerbate another, and this will certainly have an impact in terms of how children are able to cope and build resilience.

The World Economic Forum, in the *Global Risks Report 2023*, warns that systemic challenges have intensified over the previous year with signs of uncertainty, instability, and fragility, and the risks will have compounding impacts and unpredictable consequences.[48] The report notes that while current risks include the cost of living crisis, as well as geo-economic confrontation, over the next 10 years, the interplay between biodiversity loss, pollution, natural resource consumption, climate change and socioeconomic drivers will make a dangerous mix, given how the world is highly dependent on nature.[49]

45 World Economic Forum, 'Global Risks Report 2023'.
46 UNDP, 'Social Protection and Climate Change: Scaling up Ambition', 2019, Accessed 12 October 2023.
47 UNDP, 'Polycrisis and Long-Term Thinking'.
48 World Economic Forum, 'Global Risks Report 2023'.
49 Ibid.

Figure 8. Crises comparison – 2 years vs. 10 years

Based on World Economic Forum's Global Risk Perception Survey (GRPS) with over 1200 experts across academia, businesses, government, international community and civil society. To complement GRPS data on global risks, the report also draws on the World Economic Forum's Executive Opinion Survey (EOS) to identify risks that pose the most severe threat to each country over the next two years, as identified by over 12,000 business leaders in 121 economies.

	2 years		10 years
1	Cost of living crisis	1	Failure to mitigate climate change
2	Natural disasters and extreme weather events	2	Failure of climate-change adaptation
3	Geoeconomic confrontation	3	Natural disasters and extreme weather events
4	Failure to mitigate climate change	4	Biodiversity loss and ecosystem collapse
5	Erosion of social cohesion and societal polarization	5	Large-scale involuntary migration
6	Large-scale environmental damage incidents	6	Natural resource crises
7	Failure of climate-change adaptation	7	Erosion of social cohesion and societal polarization
8	Widespread cybercrime and cyber insecurity	8	Widespread cybercrime and cyber insecurity
9	Natural resource crises	9	Geoeconomic confrontation
10	Large-scale involuntary migration	10	Large-scale environmental damage incidents

Source: World Economic Forum (2023)

The collapse of such ecosystems could have far-reaching economic and societal consequences, like rise of more zoonotic diseases, falls in crop yields and nutritional value, growing water stress, and extreme weather events from degradation of natural flood protection systems. Hence, failing to adequately account for the complex ways in which nature destruction and climate change may result in cascading impacts across sectors and domains, can lead to blind spots in planning for the climate shocks and stresses, with implications for adaptive capacities of children, and the ability to effectively mitigate risks.[50]

[50] Lawrence, J., Blackett, P., and Cradock-Henry, N.A., 'Cascading Climate Change Impacts and Implications', *Science Direct*, 2020, www.sciencedirect.com/science/article/pii/S2212096320300243.

Chapter 3
Climate change is exacerbating inequality

There are four mechanisms through which climate change drives inequality. First, by multiplying risk through the creation of cascading impacts and interactions between other climate and non-climate shocks. Second, through each dimension of risk, widening the gap between wealthy and poor children in terms of their exposure, their vulnerability, and their capacity to cope and recover. Third, not just through wealth and income, but also through a variety of other types of inequality, such as gender-based inequality, race-based inequality, ethnic and indigenous-based inequality, amongst others. And finally, by reinforcing the poverty trap, making it very difficult for the poor to escape poverty. Each of these areas will be explored in more detail in this chapter.

Climate change exacerbates inequality by multiplying risk, with disproportionate impacts on social services

As illustrated in the previous chapter, climate change is a risk multiplier. Its impacts have profound social, economic and even political implications. As a starting point, it increases the pressures on children's access to key essential services in health, early childhood development, education, water and sanitation, nutrition and protection. And as access to these services is reduced, a range of additional risks and pressures are placed on children, particularly the poorest.

Climate change can also multiply risk through increased water and food insecurity. As precipitation changes affect agricultural practices, sudden-onset events can create floods or storms that wipe out critical infrastructure for reaching markets. And as changes to temperature and precipitation cause water resources to vanish, or sea level rise causes saline intrusion to critical groundwater reserves. As the climate shocks compound, divisions that physically, socially and politically separate groups of people can exacerbate differences between them.[51]

Climate change can also multiply risk through increased displacement and migration. As changing temperature and rainfall patterns degrade food production, cause hunger and malnutrition, and create reverberating impacts on health, people are also forced to migrate – further disrupting lives and futures of children. Children could be forced to leave with their families due to rising sea levels, droughts, or other climate-related disasters, which can have significant impacts on their physical and mental health, as children will be even more vulnerable to violence, exploitation, and abuse. For example, climate change can lead to internal migration of families to urban areas, where children may be forced into labour.[52]

This multiplication of risk exacerbates inequality, as poorer children have fewer resources to respond to the increasing frequency, as well as the types of crises, shocks, hazards and stresses that they are faced with. Marginalized children in vulnerable regions could be more susceptible to disease, have pre-existing health conditions or live in areas that do not promote good health or well-being; for instance, loss of income and food supply shortages could lead children in poorer rural households to nutritional deprivations, which can have both immediate and lifelong impacts.[53] Moreover, the resulting pollution and degradation of natural resources cause respiratory illnesses, malnutrition, vector-borne and water-borne diseases, mental disorders and allergy-related illnesses in children.[54]

All of these threaten human health and well-being, destabilize assets, weaken coping capacities and response infrastructures, and substantially increase vulnerable individuals and communities. Children and their families may be able to withstand the impacts of one, or two shocks and stresses, but when they occur frequently, and when they vary in nature, it erodes their coping capacities and strategies, increases their vulnerability, pushing the poorest children further into poverty. Overlapping hazards ultimately make these places even more precarious and risky for children – drastically reducing their opportunities to develop their full potential.

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51 UNICEF, 'The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index', 2021.
52 ILO: Vulnerabilities to child labour. Geneva: International Labour Organization, 2022.
53 Ke, J., & Ford-Jones, E. L. (2015). Food insecurity and hunger: A review of the effects on children's health and behaviour.
54 IPCC, 'Climate Change 2022: Impacts, Adaptation, and Vulnerability', Working Group II Contribution to the Sixth Assessment Report, 2022, Retrieved from https://www.ipcc.ch/report/ar6/wg2/.

The disproportionate impact of these multiple risks on fundamental coping capacities and access to social services further exacerbates inequality:

Disproportionate impacts on health

Rising temperatures increase incidences of vector-borne and water-borne diseases, while air pollution leads to dangerous respiratory and health conditions that hit children the hardest – largely because the early stage of their physiological and cognitive development makes them less-equipped to deal with climate-related shocks and stresses. Today, more than one in four childhood deaths under five years of age are attributable to unhealthy environments. According to the World Health Organization (WHO), more than 88% of diseases attributable to climate change occur in children younger than 5 years of age.[55] Furthermore, the most impoverished countries are the ones confronted by the most significant environmental and climate impacts on health, and the developing countries in the East Asia and Pacific region have limited capacity and resources to deal with these emerging challenges.

Increased frequency and intensity of heatwaves are leading to more cases of heat stroke and dehydration among children, particularly in low-income countries. A study concluded that there is a higher risk of child mortality during heatwaves, with heightened risk to infants than older age groups.[56] Outdoor and indoor air pollution are directly linked to pneumonia and other respiratory diseases that account for almost one in 10 under-five deaths, making air pollution one of the leading dangers to children's health (as they absorb more pollutants given their body size and higher breathing rates). Additionally, mortality attributable to the environment varies significantly across the region, with 12.25 deaths per 100,000 being credited to the environment in Japan, compared to 297.02 deaths per 100,000 in Myanmar.[57] This has an important health equity dimension, with the largest health risks posed to children in the poorest communities who have contributed least to emissions.

Climate change is also contributing to the spread of vector-borne diseases such as malaria, dengue fever, Zika, and Lyme disease, which can have serious consequences for children, particularly given their developing immune system. Globally, the number of reported dengue cases increased from 2.2 million in 2010 to over 3.34 million in 2016, and the region has observed a sharp increase in dengue cases, particularly in Cambodia, the Lao People's Democratic Republic, Malaysia, the Philippines, Singapore, and Viet Nam.[58] The risks have been largely driven by factors like suitable local temperatures and high levels of precipitation.

Young children and children under 5 are more vulnerable than adults to the life-threatening effects of heatwaves, since they are less able to regulate their body temperature, and must rely on others to control the temperature of the surrounding environment.[59] Children are also more likely than adults to be injured or experience psychological trauma, which affects their mental health and wellbeing, or be killed by natural hazard-related disasters.[60]

Disproportionate impacts on water, sanitation and hygiene

Climate change is contributing to a growing water crisis and putting the lives of millions of children at risk.
The changing climate is one of many forces contributing to an unfolding water crisis. In the coming years, demand for water will increase as populations grow and move, industries develop and consumption increases. This can lead to water stress, as increasing demand and use of water strains available supplies.

In areas impacted by increasing incidence and frequency of droughts, water for drinking, cooking, bathing, cleaning, and livelihood activities like subsistence farming may decline or be degraded. With less water available, children eat less nutritious food, and children and women often have to walk long distances to collect water, missing out on school or work. Without water, many families are forced to migrate, leading to displacement, and in some cases, conflict.

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55 Sheffield, P.E. and Landrigan, P.J., 'Global Climate Change and Children's Health: Threats and Strategies for Prevention', *Environ Health Perspect,* 2011.
56 Arsad, F.S., Hod, R., Ahmad, N., Ismail, R., Mohamed, N., Baharom, M., Osman, Y., Mohd Radi, M.F., and Tangang, F., 'The Impact of Heatwaves on Mortality and Morbidity and the Associated Vulnerability Factors: A Systematic Review', *International Journal of Environmental Research and Public Health*, 2021.
57 UNICEF East Asia & Pacific, 'Children's Environment and Health in East Asia and the Pacific: A Review of Emerging Evidence', 2019, Retrieved from https://uni.cf/42pzcgi.
58 WHO, 'Dengue in the South-East Asia', Retrieved from www.who.int/southeastasia/health-topics/dengue-and-severe-dengue.
59 Hoffman, J., 'Heat Waves Affect Children More Severely', *Scientific American*, 2018, Retrieved from www.scientificamerican.com/article/heat-waves-affect-children-more-severely/.
60 Society for Research in Child Development, 'Understanding the Impacts of Natural Disasters on Children', 13 August 2020, Retrieved from https://www.srcd.org/research/understanding-impacts-natural-disasters-children.

Lack of adequate water quantity also inhibits good sanitation and hygiene practices. As water supplies are rationed to meet a family's immediate survival needs – drinking and food preparation - practices such as hand washing and toilet flushing are often minimized in order to conserve water, leading to increased occurrences of diseases across communities and in health care facilities. Water-based toilets may cease to function, increasing the risk of gender-based violence for women and girls who may have to resort to open defecation. Open defecation poses serious health risks by increasing faecal-oral disease transmission and can contaminate the environment.

Flooding and increased precipitation can be deadly in areas with unsafe or insufficient water and sanitation services, or where open defecation occurs. Floods can inundate, destroy or damage infrastructure such as wells and toilets. When toilets are flooded, they can contaminate water supplies, making water deadly to drink. Peaks in diarrheal mortality and morbidity are commonly associated with seasonal rains, flooding and extreme weather. Indeed, the latest IPCC WGII report (2022) concluded that heavy rainfall events (high confidence) and flooding (medium confidence) are associated with increased water-borne diseases, particularly diarrheal illnesses, including cholera (very high confidence) and other gastrointestinal infections (high confidence)[61] in high, middle and low-income countries. Water insecurity and inadequate water, sanitation and hygiene increase disease risk (high confidence). Recurring floods can cause communities to abandon safe sanitation and hygiene practices and return to defecating in the open, which can further increase water-borne disease outbreaks and pollution of the surrounding environment, including water sources and freshwater ecosystems.

Melting snow, glaciers and sea ice impact access to water in the present greatly threaten to change water sources in the future, since many communities rely on meltwater for their water supply of basic household water needs. As ice melts, it not only contributes to rising sea levels, but also depletes other freshwater resources. Furthermore, ice melting does not provide water security, as ice does not slowly melt through the growing season – so even when the amount of water annually is the same, it may not be coming at the most needed times.

Rising sea levels can lead to saltwater infiltration of freshwater sources, rendering the water undrinkable. Rising sea levels are already having a major impact, particularly in low-lying coastal areas and small island developing states, which, when combined, are home to at least 25 per cent of the world's population.[62] These regions have less than 10 per cent of the global renewable water supply, leaving populations dependent on groundwater sources. Overexploitation of groundwater together with rising sea levels and higher tides contributes to salinization. The latest IPCC WGII report concludes that risks to water security will occur as early as 2030, or earlier for small island developing states.[63]

Disproportionate impacts on nutrition

Climate change is also affecting the availability and quality of food, particularly in low-income communities. Extreme weather events such as droughts and floods can lead to crop failures and food shortages, while rising temperatures can impact the nutritional content of crops, reducing their quality and nutritional value. The WHO estimates that globally, climate change will lead to nearly 95,000 additional deaths per year due to undernutrition in children aged 5 and under by 2030, and an additional 24 million undernourished children by 2050.[64] Furthermore, climate change is expected to lead to an additional 7.5 million children under the age of 5 who are moderately or severely stunted by 2030.[65]

Children are also more likely to experience health complications due to decreased nutritional value of staple crops, because of higher carbon dioxide concentrations. A study from 2021 reveals how climate can have a profound impact on child sustenance – higher long-term temperatures were found to cause a significant drop in overall child nutrition.[66] Likewise, an increase in precipitation is associated with overall higher mortality rates, and have long-term effects on child health due to the lack of proper nutrition as a result of risk of amplified infectious diseases from water and food.[67]

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61 IPCC, 'Climate Change 2022: Impacts'.
62 United Nations, Security Council Press Statement on Situation in Myanmar, Retrieved from https://press.un.org/en/2023/sc15199.doc.htm.
63 Ibid.
64 WHO, 'Climate Change and Health', 26 February 2021, Retrieved from www.who.int/news-room/fact-sheets/detail/climate-change-and-health.
65 Ibid.
66 Niles, M.T., Emery, B.F., Wiltshire, S., Brown, M.E., Fisher, B., and Ricketts, T.H., 'Climate Impacts Associated With Reduced Diet Diversity in Children Across Nineteen Countries', *Environmental Research Letters,* 16(1), 014010, 2021.
67 Helldén, D., Andersson, C., Nilsson, M., Ebi, K.L., Friberg, P., and Alfvén, T., 'Climate Change and Child Health: A Scoping Review and an Expanded Conceptual Framework, *The Lancet Planetary Health*, Vol. 5, March 2021, Retrieved from www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30274-6/fulltext.

Effects on child nutrition bring additional complications. Undernutrition in the first two years of life can lead to irreversible stunting, with negative effects on children's physical and cognitive development, which has life-lasting impacts in learning outcomes, for example. A study conducted by the International Food Policy Research Institute (IFPRI) illustrates how climate-related factors such as drought, floods, and extreme weather events have contributed to the undernutrition and malnutrition of children in Indonesia. These events have caused crop failures, reduced agricultural productivity, and disrupted food supply chains, leading to food insecurity and limited access to nutritious foods for families, particularly those in rural areas. The study also found that children living in households affected by climate-related shocks were more likely to experience stunted growth, wasting, and being underweight, than children in households that were not affected.[68]

Other cascading impacts due to nutrition and food insecurity expands to children's educational performance. Malnourished children are also more susceptible to illness, which can result in absenteeism and dropouts from school. A study conducted by the World Food Programme (WFP) in the Philippines found that children who suffer from malnutrition have lower cognitive and physical development, which can affect their academic performance and future livelihood opportunities. The study also found that many children in the Philippines, particularly those from low-income families, often have limited access to nutritious food, which can contribute to malnutrition and affect their learning and concentration in school. As a result, these children are at a higher risk of dropping out of school and having limited job opportunities in the future.

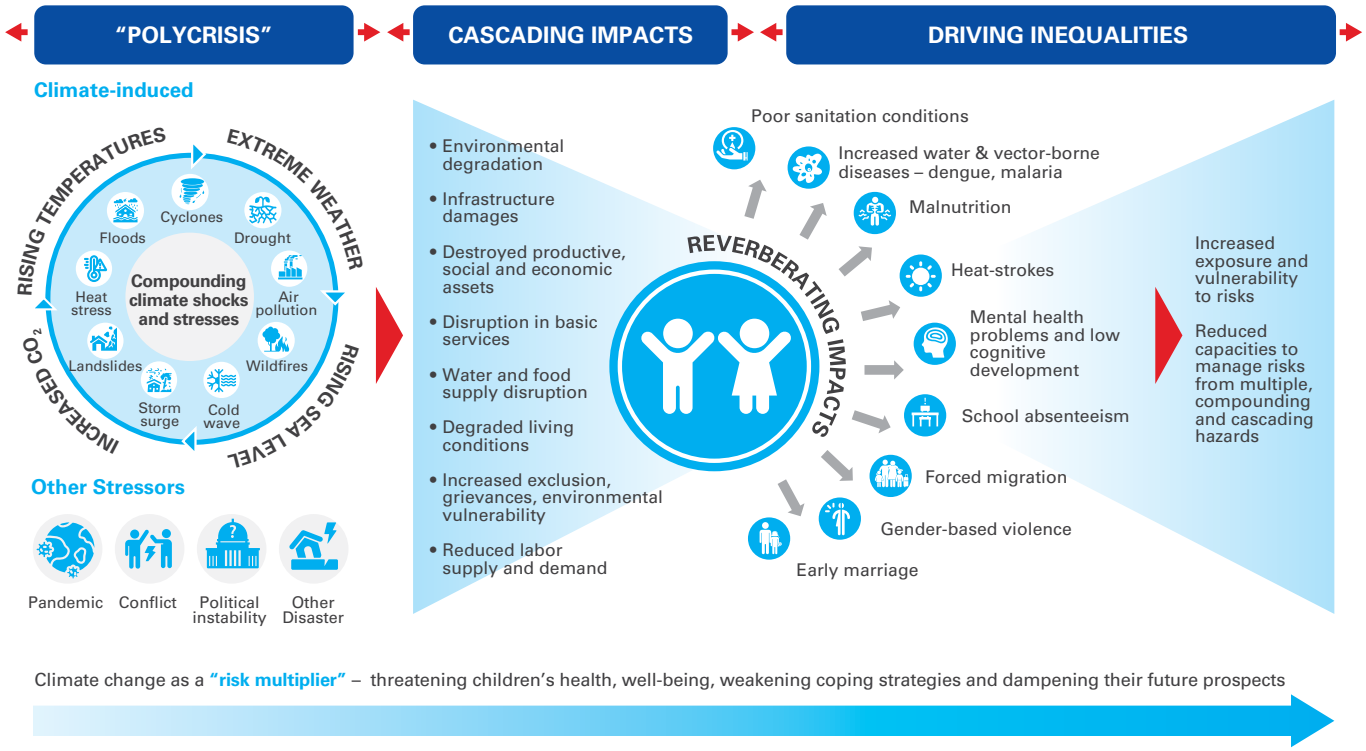
Disproportionate impacts on education

Beyond children's rights to health and food, climate change also threatens their right to education. In the most direct way, climate-related disasters can interrupt children's and adolescents' education by damaging or even destroying schools and relevant infrastructure, like bridges and roads that connect communities to schools. Such destruction can disrupt education and early childhood development centres for days and even weeks – and in countries with limited alternative education modalities during disasters, this can lead to missed classes and a lower academic performance compared to other schools in the country.[69] An example of this is happening in Malaysia where SPM exams for young children, a very important exam taken at the end of secondary school, are being postponed due to floods. In addition, students are affected mentally and their families have lost valuable assets like a home to live. Climate disasters can also cause injuries to parents, students and teachers – resulting in absenteeism, as children may need to miss school to care for family members affected by climate-related calamities. Higher temperatures also impact on children's learning in the classroom and their educational attainment.

Other impacts of climate change on education are indirect. Changing weather patterns could affect the viability of agriculture livelihoods, adding financial stress to vulnerable families who may not be able to afford school expenses for children, and may decide to involve them in farm labour or other livelihood activities. In Myanmar, UNICEF conducted a study on the impacts of climate change on children's education. It found that rising temperatures and erratic rainfall patterns in Myanmar have led to reduced agricultural productivity and food insecurity, which in turn has affected children's access to education. Many families have been forced to pull their children out of school in order to help with agricultural work, or because they cannot afford the cost of education due to the economic impact of climate change on their livelihoods.

[68] Fanzo, J., McLaren, R., Davis, C., and Choufani, J., 'Climate Change and Variability: What are the Risks for Nutrition, Diets, and Food Systems?', *IFPRI*, 2017.
[69] UNICEF, 'It is Getting Hot: Call for Education Systems to Respond to the Climate Crisis', 2019, Retrieved from http://bitly.ws/EaPQ.

In addition, the stress and trauma associated with climate-related disasters can impact children's mental health and their ability to learn, even from before preschool years. Furthermore, the loss of family livelihoods and income due to climate stress is also correlated with a loss of education, as children are obliged to assist with household tasks, or to seek work, leading to increases in child labour, child marriage, and other violations of their rights.[70]



Climate change exacerbates inequality through each dimension of risk

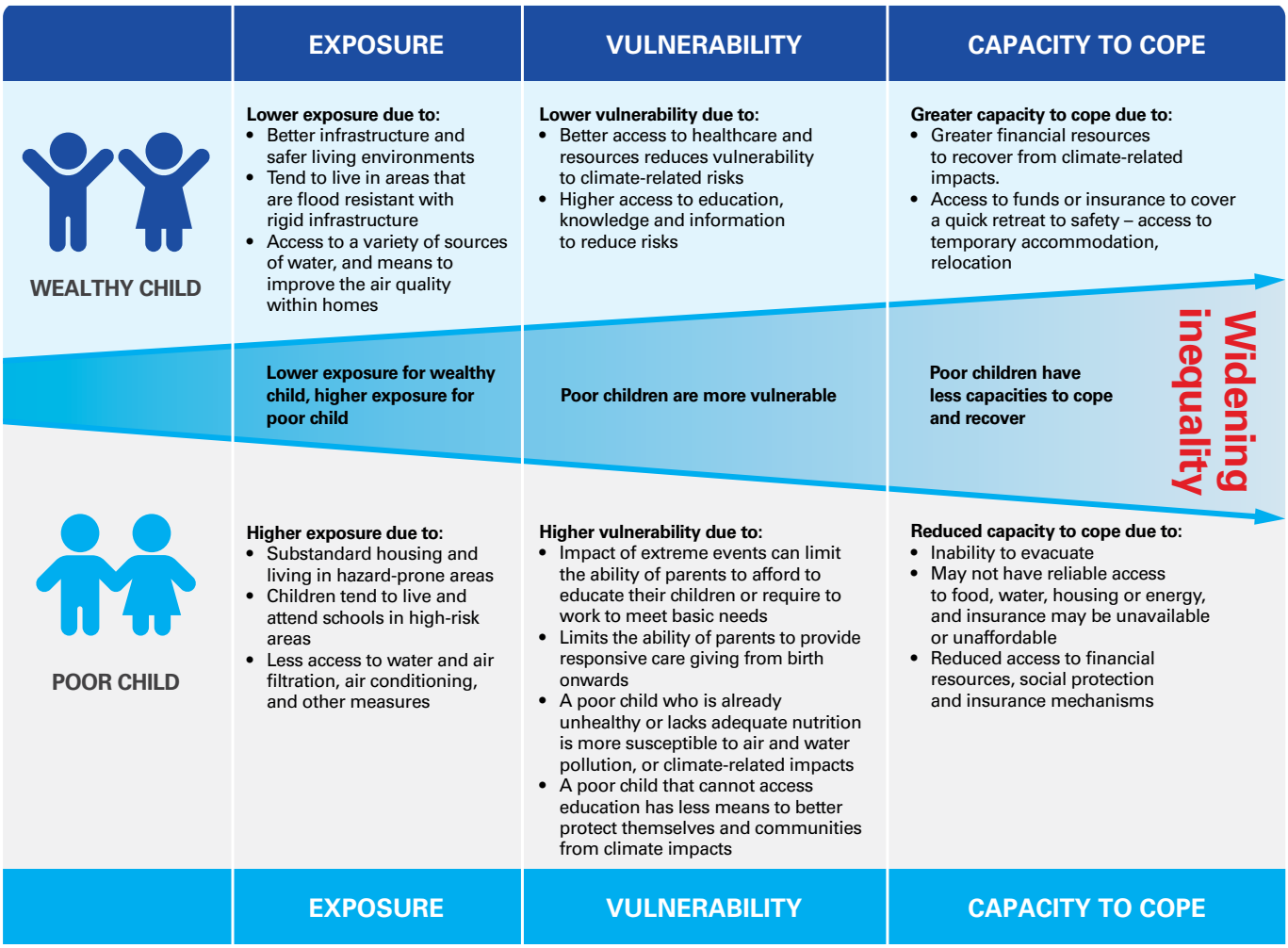
Climate change doesn't affect all children to the same degree. The poorest children are less able to access key resources – such as safe water and sanitation, food and health facilities – when crises occur. This pushes them further into poverty. Wealthier children, meanwhile, may have access to these resources even if crises negatively impact them. The end result is that gaps between the poor and rich grow as the impacts of climate change become more frequent and severe.

The poorest children are impacted disproportionately through all three dimensions of risk: a) exposure; b) vulnerability; and c) coping capacities to recover. As illustrated in Figure 9, poorer children tend to me more exposed to climate and environmental hazards, shocks and stresses, as they tend to live in geographical areas that are lower-cost due to the likelihood of flooding or proximity to industrial pollution, for example. Poorer children also tend to be more vulnerable due to their relative lack of access to key essential services and commodities such as health care, education, and clean water and sanitation, among others. Poorer children also tend to have less coping mechanisms to better protect, and recover from, climate and environmental shocks, hazards and stresses. Their families are often reliant on livelihoods linked to the environment around them; they may not have access to measure that can better protect them, such as air filtration and water filtration systems, or air conditioning. They may not have access to social protection systems that can help avoid the selling of productive assets, or taking children out of school.

This situation ultimately limits and reduces opportunities for young people and families to break the poverty cycles, as it exacerbates existing inequalities and further strains already limited resources, making it more difficult for them to invest in education, health care, and sustainable livelihoods.

[70] Ibid.

Figure 9. Differences in exposure, vulnerability and coping capacities in rich child vs. poor child



Climate change affects many types of inequality

While the above example examines the exacerbation of wealth inequalities, there are a variety of other inequalities that can similarly be exacerbated by climate hazards, shocks and stresses. The table below demonstrates how climate change exacerbates different dimensions of inequalities amongst the poorest and vulnerable population, particularly focusing on economic, political, gender, racial and indigenous spheres of cross-cutting categories.

Climate change disproportionately affects marginalized children, such as those who work, are out of school, live on the streets, have disabilities, or belong to indigenous, LGBTQI+, or other marginalized groups who are vulnerable to exclusion, violence and exploitation because of the impacts of social stigma, discrimination and hatred. Girls, in particular, face increased risks of being pulled out of school, forced into early marriage, or sold to human traffickers due to persistent poverty. They are also more vulnerable to violence like sexual assault and abuse during environmental crises. In 2013, Typhoon Haiyan devastated the Philippines, leaving over 6,000 people dead and millions displaced. Girls, women and children were disproportionately affected, with reports of sexual violence and exploitation in the aftermath of the disaster. Girls are also more likely to be killed by disasters than boys or men. For example, following Cyclone Nargis in Myanmar, the greater mortality of girls than boys was attributed to the limitations in their ability to swim or climb to safety.[71] Children with disabilities also experience more discrimination in disaster response measures and experience exclusion and adverse outcomes from disruptions to health, rehabilitation and other support services.[72]

[71] IFRC, 'Gender-Based Violence in Disasters in Asia Pacific: Case Studies', 2021, Retrieved from www.ifrc.org/sites/default/files/2021-11/GBV-in-disasters-AP-case-studies.pdf.

[72] UNICEF, 'Children with Disabilities', 2019, Retrieved from www.unicef.org/media/128976/file/UNICEF%20Fact%20Sheet%20:%20Children%20with%20Disabilities.pdf.

Table 3. How climate change exacerbates inequalities

Categories of inequality	How climate change exacerbates inequalities
Economic	• Increased income disparities due to loss of livelihoods and assets • Limited access to recovery resources and opportunities • Forced child labour to support affected families in response to economic strains • Reduced access to early childhood development services, education and resources due to damages in school infrastructures • Resource depletion resulting in reduced standard of living
Political	• Growing political influence among the more fortunate erodes trust in the ability of governments to address the needs of the majority, leading to destabilized political systems • Unequal distribution of climate adaptation resources and funding • Limited influence of children on policies that affect their well-being and future
Gender	• Disproportionate burden on women for caregiving, food, and water provision in emergencies. For example, as climate change reduces the availability of safe water sources, they often have to walk longer distances in search of water, increasing their exposure to climate hazards • Women and children are 14x more likely than men to die as a result of climate-induced disasters[73] • Women tend to be disproportionately susceptible to food insecurity aggravated by climate change. For example, they are often the first ones to reduce food consumption in the event of lowered crop yields and crop failure, or in cases of food shortage after a hazard event • Increased risk of gender-based violence during disasters and displacement • Gender biases in access to resources and decision-making power • Early marriage and increased risk of sexual exploitation for girls • Unequal access to education for girls due to climate-related disruptions • Increased risk of trafficking
Racial	• Systemic racism in resource allocation and disaster response • Exclusion from decision-making processes and climate activism
People with disabilities	• Disabilities are not supported/ responded to/ accounted for in disaster response • Experience exclusion and adverse outcomes from disruptions to health, rehabilitation and other support services
Indigenous groups, smallholder farmers and coastal communities	• Displacement and loss of traditional lands due to climate change impacts • Unpredictable climate conditions can damage the confidence of indigenous groups that their traditional knowledge of the environment can guarantee their livelihoods • Threats to traditional livelihoods and food sources as their lives and livelihoods are attuned to environmental and climatological conditions that are now changing rapidly • Risk of disappearance of identity and culture as well as the destruction of natural habitats • Potential to incur greater losses in face of hazard events, while having fewer resources to cope and recover • Exclusion from decision-making processes and climate change negotiations

Climate change reinforces the poverty trap

A part of the way that climate change exacerbates inequalities is because it can reinforce the poverty trap – preventing poor people from gaining a chance to escape, which affects future generations. An estimated 24.1 million people are living in extreme poverty (defined as living on less than US$1.90/day) in the East Asia and Pacific region.[74] The World Bank also estimates that without concerted action, the East Asia and Pacific region could see an additional 7.5 million people fall into poverty due to climate impacts by 2030 – representing an approximately 31% increase.[75] The region also houses the world's largest population of slum dwellers (250 million), and the highest rates of urban poverty.[76]

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[73] UNDP, 'Women are hit hardest in disasters, So Why are Responses too Often Gender-Blind?', 2018, Retrieved from www.undp.org/blog/women-are-hit-hardest-disasters-so-why-are-responses-too-often-gender-blind.

[74] World Bank, 'Half the Global Population Lives on Less Than US$6.85 Per Day', 2018, Retrieved from https://blogs.worldbank.org/developmenttalk/half-global-population-lives-less-us685-person-day.

[75] Ibid.

[76] World Bank, 'East Asia's Changing Urban Landscape: Measuring a Decade of Spatial Growth', 2015, Retrieved from www.worldbank.org/en/topic/urbandevelopment/publication/east-asias-changing-urban-landscape-measuring-a-decade-of-spatial-growth.

As climate-related shocks escalate, coastal regions, especially in Southeast Asia, are expected to see significant increases in economic losses.[77] Climate change acts as an amplifier of existing inequities, with the result that the world's poorest and socially disadvantaged children will bear the greatest brunt.

Figure 10. The vicious poverty cycle

Climate change also inhibits the ability of parents and caregivers living in poverty to meet the basic needs of their children. As poor households are constrained in their ability to provide nutrition, schooling and health care for their children, this is greatly dampening progress in development and productivity growth, both of which are critical imperatives for sustainable development.[78] These conditions could also fuel social unrest and conflict, which eventually contributes to poverty and inequality. This underscores the reality that poverty pushes people to be trapped within a system that traps them for generations – intergenerational poverty begets poor health and a lack of education, impacting people's ability to work, further pushing them into poverty as part of a vicious "cycle of poverty".[79]

Moreover, children, young people and families who are already disadvantaged by poverty, and therefore have the fewest resources for coping with its impacts, are likely to face some of the most immediate dangers of climate change. For example, flood and drought zones often overlap with areas of high poverty and low access to essential services, such as water and sanitation. Following floods in 2011, Cambodian children from households with poor sanitation and untreated drinking water, as well as having a mother who lacked education, experienced higher rates of diarrhoea than households with treated water, soap and more highly educated mothers.[80] Additionally, as extreme weather causes decline in crop yields, poorer household livelihoods are affected, which has repercussions on the food supply, resulting in malnutrition and declining health.

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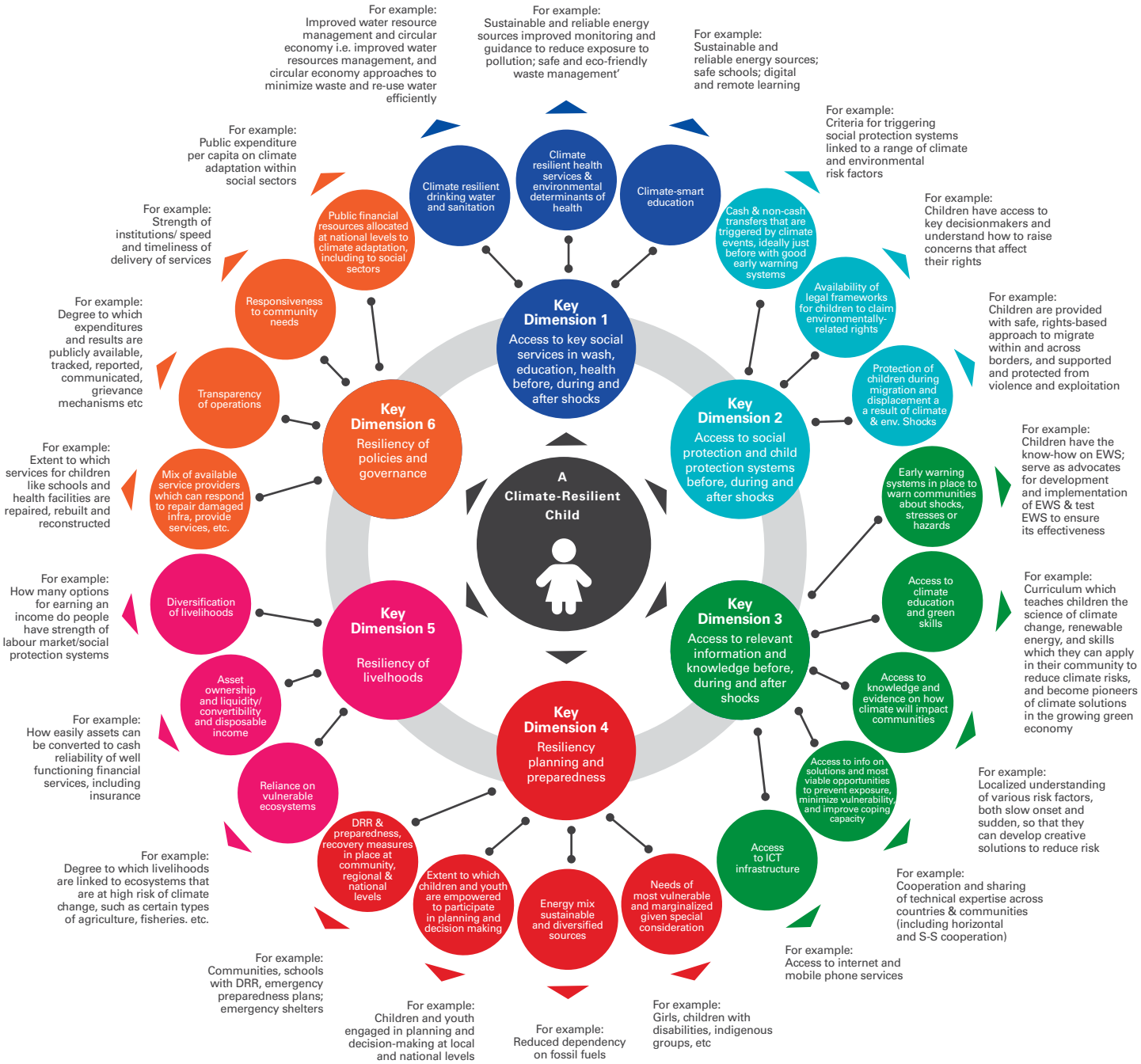
77 IPCC, 'Climate Change 2022: Impacts'.
78 Carleton, T.A., and Hsiang, S.M., 'Social and Economic Impacts of Climate', Science, Vol. 353, 9 September 2016.
79 United Nations, 'Extreme Poverty and Human Rights: Note by the Secretary-General', 2021, Retrieved from https://undocs.org/en/A/76/284.
80 McIver, L.J., Imai, C., Buettner, P.G., Gager, P., Chan, V.S., Hashizume, M., Iddings, S.N., Kol, H., Raingsey, P.P., and Lyne, K., 'Diarrheal Diseases and Climate Change in Cambodia: Environmental Epidemiology and Opportunities for Adaptation', *Asia-Pacific Journal of Public Health*, 2016.

Chapter 4
Time to take action

What does resilience for children look like?

Having a good understanding of what makes a child resilient is critical to ensure that global, regional and national mechanisms are in place from the climate crisis, and ensure that the adaptation goals are fit for purpose and to the needs of children. Following are six dimensions that can help provide an initial framework for understanding how to determine, as well as improve, children's climate resilience.

Figure 11. What does resilience look like?

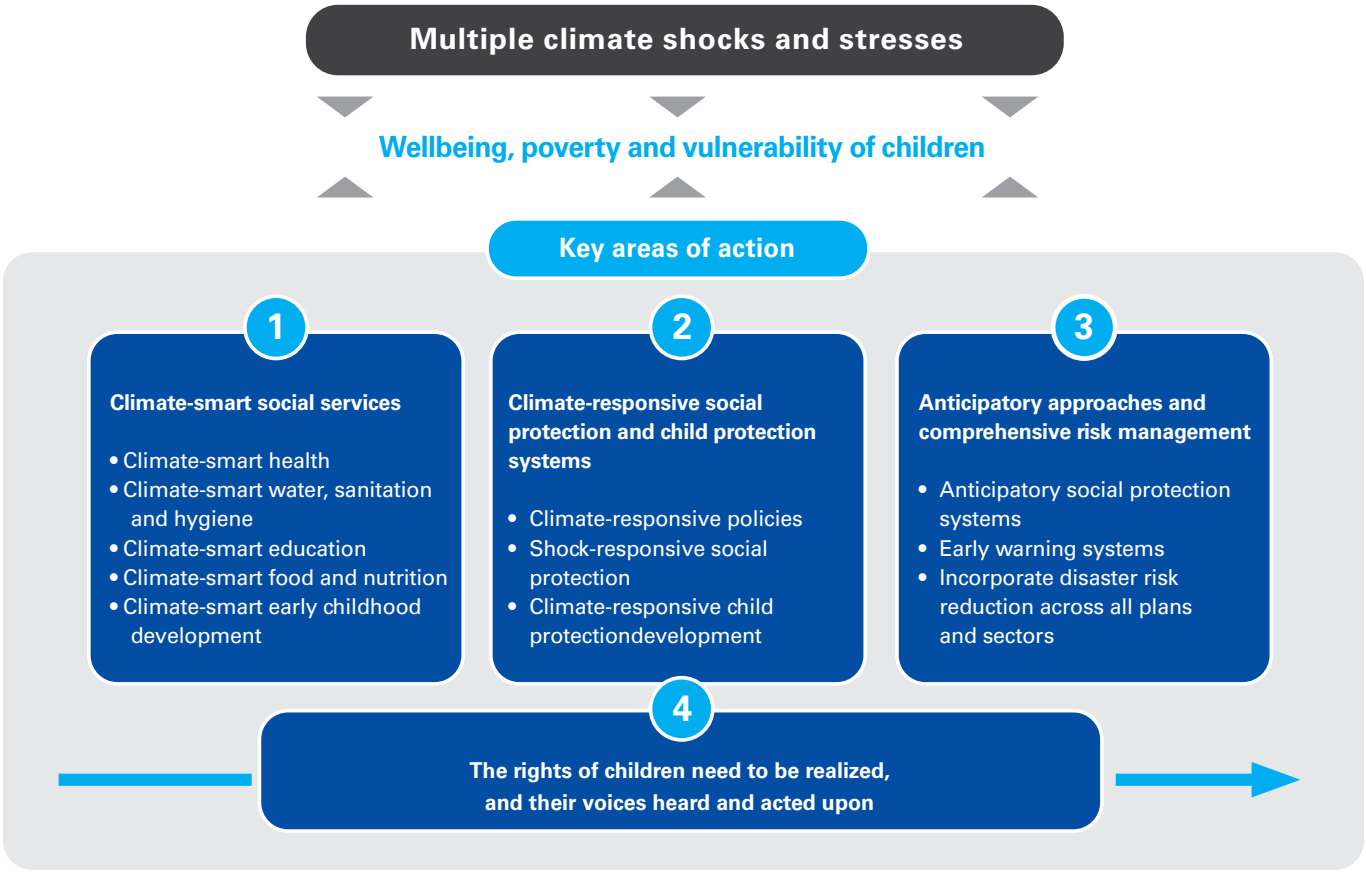


The climate crisis is exacerbating inequality in the East Asia and Pacific region. However, inequality, if remained unchecked, can make addressing climate change even more challenging. When inequality worsens, it becomes more difficult for governments and societies to make collective, long-term decisions that cut emissions, safeguard ecosystems, protect biodiversity and stabilize global temperature. Failure to do so will in return commit the world to more extreme heatwaves, crop failures, and food price shocks, exacerbating inequality further.[81]

Overall, climate change is a complex system that is impacting the health, nutrition, education, and well-being of children in numerous ways, particularly in low-income communities. Chapter 2 and 3 outlined the increasing complexity of the climate crisis and underpins the needs to understand impacts and risks beyond sectoral approaches. Solving this problem will require a comprehensive approach that addresses its root causes, as well as providing support and resources to help children and families adapt to its impacts. The approaches need to entail forward-thinking, interrelated large-scale systemic reforms, policy initiatives, innovation, and cooperation. We may have a narrow window to act, but the following economic and social priority areas act as structural determinants and accelerators for children and vulnerable populations, offering a glimmer of hope.

Ultimately, the most important action the global community can take to minimize the long-term impacts for children is to reduce greenhouse gas emissions and pollution, in order to protect the vital ecosystems that children, and everyone else, depend on. However, given the risks ahead, and the fact that many of the poorest children are already facing the impacts of climate change, there are three key areas of action that can accelerate progress to better protect children and considerably reduce the impact of the climate crisis upon them. These provide them with social services that are climate-smart and can continue to reach children despite the increasing frequency and severity of shocks, stresses and hazards; improving the enabling environment through climate-responsive policies, social protection and child protection; and enhancing our ability to anticipate, manage and respond to shocks through anticipatory approaches, early warning systems and comprehensive risk management. These actions will not only provide the best chance that children are resilient in the near term, but also set the foundations for longer term actions that will protect them from worsening impacts.

Figure 12. Key areas of action



[81] Dixson-Decléve, Sandrine, et al., *Earth for All*, New Society Publishers, 2023.

Climate-smart social services

As compounding and cascading climate risks affect children and children living in poverty disproportionately, it has become the need of the hour to invest in, and focus on, robust social infrastructure and services that target children's health, nutrition, education and WASH, as they are instrumental in protecting and advancing children's well-being. As demonstrated in previous chapter, the impacts of climate hazards on critical infrastructures are interconnected – a collapse in one during a disaster can cascade easily to others, and this implies particularly to children's dependence in these infrastructures, be it schools, clinics, or WASH services.

Some of the ways that social services can be strengthened are as follows:

Climate-smart health

- **Develop climate resilience and adaptive strategies for health system infrastructures**, including the provision of renewable energy for health clinics. Support the health sectors to develop climate resilience and adaptive strategies for new health system infrastructures, including the provision of renewable energy for health clinics. This contributes both to low-carbon development as well as resilience to climate and disaster shocks when they occur. Strengthen health system for a resilient and responsive primary health care with community engagement, including youth-led multisectoral action at the local level.

- **Ensure that environmental determinants of children's health are reflected in prevention and treatment strategies,** ensuring that climate-sensitive diseases are integrated in the national and local disease surveillance mechanisms, as well as policies and actions that are introduced to reduce environmental threats, such as air pollution or lead pollution, to children's health. Particular focus is needed on early childhood.

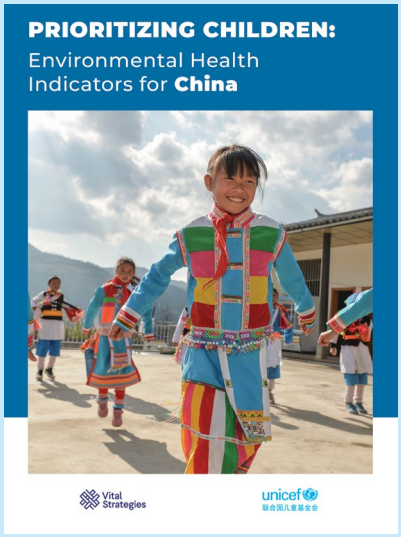
- **Reduce the environmental footprint of health centres** by promoting sustainable energy and environmental pollution-reducing solutions in the health sector across operations, including sustainable health care waste management (solid and others) and practices.

The Green Climate Fund (GCF) Sectoral Guide on Health and Wellbeing identifies two paradigm shifting pathways:

(i) Promoting climate-resilient, nature-positive health systems and services – anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress
(ii) Facilitating climate-informed advisory and risk management services and community action – strengthening information and advisory systems and promoting community action

Source: GCF. 2022. Health and Wellbeing Sectoral Guide. Sectoral Guide Series. Yeonsu: Green Climate Fund.

Reducing children's threat to health and wellbeing through environmental health indicators



One of the ways to reduce, minimize and prevent environmental risk factors, and improve children's health, is through systematic data collection and the development of indicators to track, assess and report on the impact of environment on children's health. In China, UNICEF has developed the national set of Children's Environmental Health Indicators (CEHI) in partnership with the China's Bureau of Disease Control. It includes 22 core indicators and 25 secondary indicators related to environmental hazards and impacts of those hazards on children's health. The CO is now developing interactive tracking portal for CEHI. UNICEF China is also working on the policy application and institutionalization of the CEHI, which includes the development of an environmental health index to rank cities in China.

To encourage governments, academia and civil society in developing a tracking system for CEHI, a technical guidance on CEHI, "Promoting Healthy Environments for Children Using Indicators", has also been formulated by UNICEF East Asia and Pacific Regional Office, in partnership with Vital Strategies.

Climate-smart water, sanitation and hygiene

- **Develop climate-resilient WASH services** by ensuring that WASH infrastructure and systems are sustainable, safe, and resilient to climate and disaster risks through climate and hazard vulnerability assessments and adaptation planning. Expand access to renewable and off-grid energy sources to increase resilience and reduce emissions. Ensure that governments integrate a climate rationale for WASH into key national climate policies and plans.

- **Strengthening the linkages between water resources management and WASH** sectors by working with other water users (such as agriculture) to update the water balance and support equitable water resources allocation, strengthen water resources and water quality monitoring, establish drought and flood early-warning systems, protect watershed zones, conservation programmes, build capacity for water and sanitation safety planning, and empower water-user groups that include marginalized users.

- **Recover resources through sanitation circular economy approaches** that use treated wastewater and faecal by-products for irrigation, bio-fertilizer, energy, or other opportunities. The starting point for exploring these opportunities is ensuring that communities have access to climate resilient and safely managed sanitation services. By partnering with user groups and small businesses, income generation opportunities can be explored for communities.

The Green Climate Fund (GCF) Sectoral Guide on Water Security identifies two paradigm shifting pathways supporting mitigation and adaptation solutions:

(i) Enhancing water conservation, water efficiency and water re-use – demand management and introducing a new water asset class via blue finance
(ii) Strengthening integrated water resources management and water management – preserving existing water resources, identifying new sources of water supply, and protecting communities from water related hazards

Source: GCF. (2022). Water Security Sectoral Guide. Sectoral Guide Series. Yeonsu: Green Climate Fund.

Climate resilent water supply system in Myanmar

To obtain drinking water, the villagers of Pon Tat village in Central Dry Zone of Myanmar must descend to a hand-dug well located in a parched sand stream to the north of their village, using bullock carts, buckets, and yokes. With shorter and less predictable rainfall patterns in the current weather and climate, water scarcity has become an increasingly challenging issue, particularly during the dry season, and controlling the quality of the village's drinking water source has become an even greater struggle.

On 24 April 2021, UNICEF Myanmar with the generous support of village leaders, elders, and young people initiated a study of the surrounding rock exposures and water sources. After a thorough feasibility study, the team determined that the most effective solution to address these concerns is to construct an infiltration gallery well with long intake pipes. This process involves a number of activities, including the construction of an infiltration gallery well, the survey and design of a pipe network scheme, the construction of a water tower, the installation of a solar-powered water system, and the installation of pipe networks and water meters.

On 1 June 2022, the successful completion of the infiltration gallery well, along with the installation of solar-powered water systems, has provided the people of Pon Tat village with access to a safe and climate-resilient water supply through household meters and taps.

Through their collaborative and coordinated efforts, UNICEF, local technical experts, engineers, and the community have successfully established a climate-resilient water supply system, fortified by the utilization of sustainable and environmentally friendly energy. The installation of water metres in this system further strengthens the efficient management of water usage, thereby reducing water waste and promoting the sustainability of the water supply system. UNICEF's monitoring visit reveals that a total of 971 individuals (468 male and 503 female) in Pon Tat village are expressing their satisfaction and contentment with the drinking water.

Nature-based solutions for water management in Timor-Leste

Timor-Leste faces water stress due to reduced rainfall and a prolonged dry season, particularly in rural areas heavily reliant on agriculture. The absence of major reservoirs exacerbates the challenge of water availability for consumption, sanitation, and hygiene.

To address this issue, Civil Society Organizations (CSOs) have mobilized communities to implement nature-based solutions. These solutions focus on improving natural catchments to retain more water, enhancing the yield of springs and streams. The approach includes empowering communities through knowledge-sharing, skills development, and field-based camps, with special attention given to engaging youth. Science-based tree plantation is also introduced to reduce groundwater consumption and minimize soil moisture evaporation.

Field testing of this community-based catchment management model has yielded noteworthy results. The approach aligns with Timor-Leste's updated Nationally Determined Contributions for the Water, Sanitation, and Hygiene (WASH) sector and shows potential for inclusion in the national strategy for water improvement.

UNICEF has supported the National Authority for Water and Sanitation (ANAS) in linking this approach to a larger water shed management pilot program, aligned with the National Water Resource Management Policy. A CSO named PERMARTIL, which pioneered this model, has been assisted in implementing a community-based catchment management program monitored by the government. This initiative has paved the way for integrating the community-based model as a national standard, contributing to water shed management and climate-resilient water supply in Timor-Leste.

Climate-smart education

- **Integrate climate change in teaching, learning and curriculum.** Climate change, disaster risk reduction, and environmental education must be incorporated into formal and non-formal curriculum and textbooks across the entire education cycle, starting from pre-school, as well as teacher professional development across the EAP region. Climate change must also be part of the mental health and psychosocial support schools offer, as well as school leadership and management training programmes. Digital learning and skills development also offers significant opportunities for girls and boys. Green skills and transition to green jobs for adolescents and youth will be key to ensuring they participate in the growing green economy.

- **Invest in climate resilient education systems.** Climate change must be integrated into education sector plans, and education must be part of climate change plans and financing. Targeted climate change frameworks that include both mitigation and adaptation strategies can also be developed with the participation of adolescents and youth, as well as contingency plans for climate-related emergencies for all children, including those with disabilities and other vulnerable populations. Coordination with multi-stakeholders is also key to ensuring a strong and supportive enabling environment.

- **Invest in climate resilient infrastructure and disaster risk reduction.** This includes conducting multi-hazard, child-centred risk assessments focused on the education sector, integrating climate change into Education Management Information Systems (EMIS), and ensuring schools receive early warning on climate change and disasters. This also includes establishing procedures and protocols for disaster preparedness and risk reduction for schools and ECD centres. Invest in low emission climate-resilient education infrastructure by supporting access to clean and sustainable energy sources in schools, climate and disaster-proofed WASH in Schools (WinS) that are safe for all children – especially girls, and safe school guidelines. This may also include promoting the implementation of the Comprehensive School Safety framework and incorporation into national policies, to promote child rights, sustainability and resilience in the education sector.

A potential solution in clean energy for climate-smart schools in Viet Nam

UNICEF Viet Nam has engaged with national government, local authorities, the financial sector and solar companies to identify joint strategic interventions on clean energy for schools to bring out clean energy, clean air and child health and education benefits to children in Viet Nam. They have proposed a National Solar Schools Program (NSSP) on a national level based on a market assessment for scaling Rooftop Solar Systems (RTS) in schools. A blended financing mechanism is proposed where concessional financing is combined with commercial financing, and dedicated credit lines are created for solar PV projects in the education sector by multilateral development banks and international financial institutions. This national programme will aim to scale up the use of solar energy across 40,000 schools (93 per cent of all schools in Viet Nam), benefitting 20 million school-age children. This pilot programme, and eventually a national solar schools programme, can demonstrate a strong public sector leadership in adopting clean energy, and motivating more companies and private sector actors and households towards clean energy transition.

Additionally, UNICEF Viet Nam, with the Ministry of Education and Training (MOET) and the Global Green Growth Institute (GGGI) carried out an analysis entitled, "Rooftop solar power: A potential solution in clean energy for climate-smart schools in Viet Nam", to provide a wide ranging view of current policies for initiating the development of solar rooftop for schools in Viet Nam, and exploring the potential benefits, challenges and recommendations of installing rooftop solar in public schools.

Green schools in Timor-Leste

UNICEF has been instrumental in supporting the Ministry of Education Youth and Sport (MoEYS) to integrate climate education and disaster risk reduction in both the enabling environment and school learning environment, both under the curriculum and non-curriculum-based activities. The "Green School Concept", a result of UNICEF advocacy, has immensely helped translating climate-related commitments into actions by creating a school-based platform. This platform facilitates both students and teachers to understand and contribute to a climate and environment roadmap of Timor-Leste through the increase of green coverage and waste management, both in terms of behaviour change and hands-on practices.

Children, including adolescents and girls, get knowledge on and hands on exposure to natural vegetation and associated phenomena (permaculture), school gardening, natural means of pest and microorganism management, etc. Moreover, it expands to living fencing, local seed banks and cuisine. With the support of Gender Thematic Funding, this platform will further be developed to improve girls' leadership in the climate agenda. Moving on to climate and environment-related risk management, UNICEF has supported the development of a policy options paper on Disaster Risk Reduction and Disaster Risk Management (DRR/DRM) following a comprehensive consultation process. The development of a comprehensive schools safety module is ongoing.

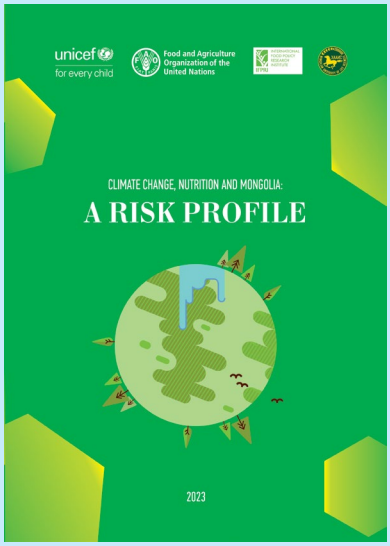
Climate-smart food and nutrition

- **Curate inclusive food environments that ensure accessibility and affordability of sustainable healthy diets.** Policies should work to guarantee the accessibility of nutritious foods with low environmental impacts for children, adolescents and women, while also restricting the access to unhealthy foods with negative environmental impacts. Fiscal measures have potential to both subsidize nutritious and sustainable foods to make them more affordable, while taxing unhealthy unsustainable foods to show their true environmental and health costs. Specifically, the school food environment is a positive entry point for UNICEF to guarantee that school meal programmes are providing foods that meet nutrient and energy needs for children and adolescents, while maintaining a low environmental impact.

- **Shift consumer demand towards sustainable healthy diets.** The importance of national leadership in driving policies that both prioritize the nutrition of children, adolescents and women, and a healthy planet, cannot be understated. As such, national food-based dietary guidelines should be informed by both health and environmental sustainability targets. Comprehensive nutrition education programmes through nutrition counselling, school curriculums, and social protection systems can help shift individual diets towards choices with lower environmental impacts. This can put children and adolescents on a trajectory to prioritize diets that are good for their health, and the planet.

- **Enhance ongoing nutrition surveillance mechanisms within high-risk areas, and expand access to nutrition to reduce vulnerability to shocks and build climate resiliency.** National nutrition surveillance systems are the primary data sources for child nutrition indicators and can provide early identification of worsening food insecurity, or malnutrition in areas prone to climate variability and extremes. This would also entail linking nutrition actors and services to disaster early warning systems, and incorporating disaster risk assessments into existing nutrition assessments. As the frequency of extreme climate shocks and other crises increases, it is becoming increasingly important to reach children with services on the early detection and treatment of severe wasting. Good nutrition protects children against food and water-borne illnesses, which can be more common after extreme climate events, and reduces the likelihood of morbidity and mortality from climate shocks. Prioritizing the improvement of nutrition surveillance systems and expanding access to nutrition services within high-risk areas will play a crucial role in reducing vulnerability to shocks, enhancing climate resiliency, and safeguarding children's health in the face of escalating climate crises.

Addressing climate impacts on food and nutrition security in Mongolia



UNICEF Mongolia has conducted an exploratory assessment on Climate Change, Food Security and Nutrition in Mongolia through a strategic partnership with the Food and Agriculture Organization of the United Nations (FAO) and International Food Policy Research Institute (IFPRI). As part of the assessment, UNICEF Mongolia drew samples of 106,695 households sampled between 2009 and 2019, by analysing indicators like household-per-capita consumption, and dietary diversity to identify ariables associated with child nutrition. In addition, a value chain analysis of meat and vegetables was also produced to identify climate change impacts along the food value chain.
To project how climate change will reduce food supply and dampen food demand due to food price increases driven by climate change, key future climate trends and their impacts on crops and livestock were analysed.
As a result, a framework for linking climate change and nutrition was developed, linking key nutrition indicators with climate change risks.

Climate-smart early childhood development

- **Create healthy environments for brain development of young children.** Early childhood, especially the first 1,000 days starting in utero, is a critical period for children's brain and body development, and has implications towards academic achievements. This initiative includes tackling air pollution, lead exposure, and other forms of pollution in early childhood spaces, child care and kindergartens, through innovative sustainable energy solutions (the use of air filters, retrofitting buildings, systematic air quality monitoring) complemented by social infrastructure (awareness building, community initiatives) to improve healthy development and learning of young children, especially from the most marginalized populations.

- **Invest in playful, child-friendly green spaces** to build foundations for brain, motor development, and 21st-century skills. Play is how young children learn best. Accessible and welcoming green spaces – through both structured/facilitated, unstructured free play – can be the inviting spaces for children to play, learn, and be curious.

- **Support families in "green" parenting** to protect and prepare young children from the early years towards a resilient future. Parenting plays a critical role in shaping the future of their children. The unique vulnerabilities and exposure of young children place even greater demands on parents and caregivers as first responders to support and empower their children, given the enormity of climate change and environmental crises – including air pollution and the lack of playful, green spaces.

Climate-responsive policies, social protection and child protection systems

Climate-responsive policies

- **Ensure children's rights and needs in national plans and policies.** This can be done by setting out ambitious mitigation and adaptation measures to guarantee the rights and the best interests of children. Children's risks and vulnerabilities in sectoral interventions at national and sub-national levels should be incorporated. This also includes creating explicit and meaningful references to children and young people in climate and environmental policies, considering them as rights-holders, important stakeholders and agents of change, and being inclusive with recognizing and considering the particular needs, rights, vulnerabilities and capacities of children. This also includes supporting countries and the relevant partners within countries to better understand the risks children – and the key services they depend on – face as a result of climate change, natural hazards and environmental degradation. This includes utilizing tools such as the CCRI, as well as the other risk assessment tools and landscape analysis, as well as providing opportunities for children and adolescents to meaningfully inform these policies and support them to take action where appropriate.

- **Find synergies between climate finance and social budgets for children.** This includes identification of child-sensitive risk markers in climate finance mechanisms, as well as identifying where social budgets like cash transfers contribute to climate, environmental and disaster risk reduction objectives. Explore the use of innovative national, regional and international climate finance tools for risk reduction, retention and transfer due to the increasing frequency and intensity of climate-related disasters and slow onset events with youth-led solutions. For example, weather index-based cash transfer programmes to reduce impacts of floods and droughts, social safety nets, etc. Devise solutions that address the economic and non-economic losses and damages due to climate change and disasters, especially the most marginalized (including children), to increase the adaptive capacities of the impacted population.

- **Integrate climate, disaster and environmental dimensions into child poverty analysis at sub-national levels.** Incorporating a climate and environmental lens to child poverty analysis, as either a dimension or as an overlap, can help provide a picture of not only the potential for shocks and risk, but also offer a basis for targeting specific programmes and services to help families mitigate and adapt to these impacts, protect assets, and reduce child poverty.

Climate-responsive social protection systems

- **Enable shock-responsive social protection.** Social protection policies can help manage the impacts of climate extremes in advance by reducing income poverty, and increasing the capacity to deal with future.[82] This is supported by significant evidence that social protection transfers increase incomes and have a significant impact on food consumption, food security, savings, and other wellbeing indicators, and can reduce poverty. However, as more countries recognize the importance of social protection as a major public policy tool, and developing or scaling-up specific child grants, progress has been uneven in terms of coverage as well as expenditure and investment. Likewise, climate-related social protection programmes remain limited, particularly for slow-onset events (sea-level rise, average long-term temperature increase, etc.). Coupled with the core poverty reduction role of social protection, shock responsive social protection systems will be a powerful tool to manage the negative impacts of climate change. This requires improving multi-hazard and risk-informed public finance management (PFM) processes to think beyond expenditure and disbursement by assessing and accounting for multi sector investments (linked to prevention, disaster risk reduction, preparedness, response and recovery).

[82] Costella, C., McCord, A., van Aalst, M., Holmes, R., Ammoun, J., Barca, V. (2021) ' Social protection and climate change: scaling up ambition', Social Protection Approaches to COVID-19 Expert Advice Service (SPACE), DAI Global UK Ltd, United Kingdom

Pantawid Pamilyang Philippino Program (4Ps)

The Pantawid Pamilyang Philipino Program (4Ps) is a flagship conditional cash transfer program in the Philippines, implemented by the Department of Social Welfare and Development (DSWD). It aims to reduce poverty and promote human capital development, providing grants to eligible households, subject to certain conditions.

As part of the 4Ps, the Family Development Sessions (FDS), held once a month, helps to ensure citizens are better prepared for disasters. One of the topics covered in the FDS is how to be disaster-ready, including what warning messages to be aware of, and what items should be packed for evacuation, including identification documents, clothes, and other essentials. It represents one way in which conditional cash transfers can be used for disaster preparedness at the household level. Post-Yolanda, FDS was also used to deliver information to the 4Ps households on how to recognize and address post-traumatic stress.

Climate-responsive child protection systems

- **Adapt child protection workforce and systems for effective case management as a result of climate impacts.** Child protection systems need to be made responsive to the increasing frequency and severity of these types of shocks, and be able to adapt and shift service provision when disasters strike. Climate change with its negative impacts will necessarily require a more specialized, rapid action oriented and targeted assistance from social workforce actors in a coordinated and comprehensive way that will ensure an effective case management approach leaving no-one behind. This includes considering child protection workers as essential responders during disasters; allocating funds to ensure child protection service delivery during disasters; and investing in preparedness for mobile services to become operational immediately following a disaster.

- **Ensure children who are forced to migrate as a result of climate change, internally or across borders, are safe and protected.** Forced migration and displacement will be necessary for many children and their families impacted by the climate crisis, especially in the East Asia and Pacific region. This will require improved systems to ensure children's rights and needs are respected throughout the process, in home, transition and destination locations. Children also need to be provided continuity of learning, even though they may be forced to migrate, such as through a "learning passport".

- **Address increased risks of gender-based violence and harmful practices because of climate-related disasters.** Disasters increase the risks of different forms of violence, abuse, and harm, especially for children and women. Actions focus on working with government, partners, and communities to prevent, mitigate and respond to different forms of gender-based violence, including child marriage, intimate partner violence, and sexual exploitation and abuse.

Anticipatory action: Early warning systems and risk management

- **Anticipatory social protection systems.** Given that climatic hazards are frequent and sudden, programmes now need to be not only shock responsive, but also shock-prepared, anticipatory and preventive. This can be forecast-based social protection linked to action protocols (Costella et al. 2017). For example, a resilience building initiative in Mongolia uses weather forecasts and weather index-based insurance approaches to provide assistance to vulnerable herder communities during periods of droughts and other climate-related hazards. Herders who participate in this programme receive training on climate risk management and sustainable agricultural practices. They also receive access to weather forecasts and early warning systems, which allow them to prepare for and mitigate the impact of drought and other hazards. In addition, the programme provides financial assistance to participating households in the form of weather index-based insurance and cash transfers, which help to protect them from the economic impact of climate disasters.

Early warning to save lives

In May 2020, Typhoon Vongfong hit the Philippines' province of Albay, where a precise early warnings and zero-casualty approach, followed by timely evacuations, undoubtedly saved lives. Likewise, in October 2020, heavy rains caused severe flooding in central Viet Nam, affecting over 7 million people, including many children. The government's early-warning system for floods and landslides helped to evacuate over 1.3 million people, including many children, to safer areas before the floods hit. In addition, UNICEF provided emergency supplies to affected families, including water purification tablets, hygiene kits, and educational materials. This assistance helped to protect the health, safety, and well-being of children and their families during and after the disaster. When Cyclone Harold hit the Solomon Islands, Vanuatu, Fiji, and Tonga, here too timely early warning systems minimized the impact.

During Typhoon Haiyan in 2013, the early-warning system helped to evacuate over 800,000 people, including many children. This helped to prevent a higher number of fatalities and injuries. In addition, the Philippines Government worked with UNICEF and others to provide emergency supplies to affected families, including food, water, shelter, and medical care. This assistance helped to protect the health and well-being of children and their families during and after the disaster.

- **Early warning systems provide enormous benefits.** Early warning systems can identify areas at risk of drought or food insecurity, allowing governments and aid organizations to provide assistance before people become malnourished, or forced to sell their assets to survive. These systems ensure that governments and other stakeholders are willing and able to prepare for reasonable worst-case scenarios.

  Additionally, early warning systems can help protect children from disasters caused by natural hazards such as typhoons, floods, and any other hazards by providing advance notice to communities, allowing them to prepare and evacuate if necessary. This can help to save lives and minimize the impact of disasters on children and their families.

  Early warning systems also offer a relatively cheap and effective way of protecting children and vulnerable populations and their assets from hazards. It is estimated that spending just US$800 million on them in developing countries would avoid losses of US$3 billion to US$16 billion per year.[83] Hence, configuring and putting in place integrated multi-hazard early warning systems to capture the compounding and cascading risks of climate change can save children's lives, prevent poverty, and build resilience.

- **Incorporate disaster risk reduction across climate and disaster risk management plans, as well as social sectors.** This involves supporting countries in integrating child-specific concerns into national and local DRR and climate change policies and actions, ensuring that the risks to their survival, wellbeing and development are systematically considered and addressed in line with a life-cycle approach. This also includes extending support to implement measures that help better mitigate and prepare them for the increased frequency and severity of climate-related disasters, and adopting sectoral guidelines that are harmonized and address the full range of climate, disaster and environmental risks that feeds into risk-informed programming.

[83] 83 Global Center on Adaptation, 'UN Estimates the Global Cost of Climate Adaptation', 20 January 2021, Retrieved from https://gca.org/un-estimates-the-global-cost-of-climate-adaptation/.

Across everything, the rights of children need to be realized, and their voices heard and acted upon

- **Establish a legal framework for children to access their rights in the context of climate change.** Children typically have limited access to formal judicial mechanisms. A framework with recommendations for children and young people, caregivers, civil society and governments can support the empowerment of children to advance climate and environmental justice. Specifically, this includes addressing education, expression, access to remedy and safety. The model has already been developed and tested in Malaysia and Indonesia and represents a most solid framework to provide an effective right to climate and environmental justice for children in a tangible manner.

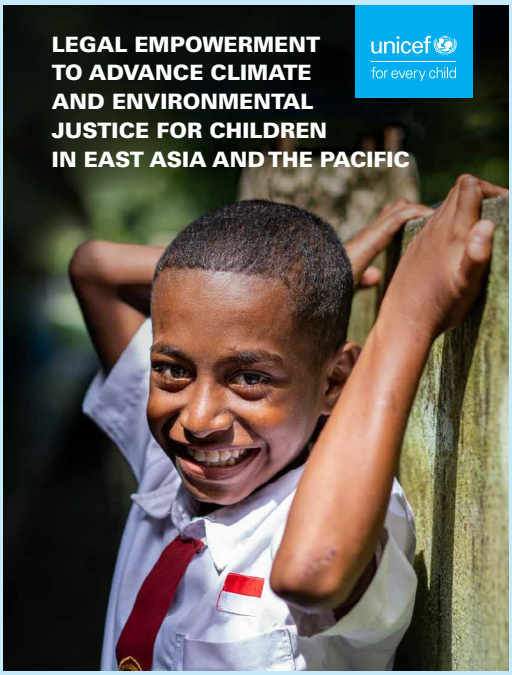
- **Listen and act on the needs and rights of children and young people.** This means engaging children and young people on climate across sectors, and providing a platform for them to advocate and ensure their voices are heard at the highest levels of decision-making. At the national level, this means integrating children and adolescent participation in local community initiatives, DRR planning and responses, and youth-led climate action. Across the sectoral initiatives described below, this means engaging children and young people in designing and implementing innovations, with particular focus on climate resilient education, WASH, and health youth-led solutions. While this needs to happen for children and young people of all ages, particular focus needs to be on engaging children under the age of 18, with guidance for specific age groups including early childhood.

  We need to be guided by children and young people. This is their planet to inherit. They have done least to create the problem – and they will bear 100 per cent of the impacts. They have the right to be heard, and we have a duty to listen and respond to their calls. The urgency is requiring them to not wait for adults, but to act themselves, to champion solutions in mitigation, as well as adaptation with creativity and ingenuity. We need to support that process, and provide them with what they need, including the skills and resources, to scale the work up. At the very least, we owe them every chance for success.

Environmental action by young people in Indonesia

UNICEF Indonesia, in partnership with the Greeneration Foundation, implemented a programme to promote child-centred advocacy, capacity development, volunteerism, and awareness of climate and environmental action for and with children and young people. Over 1.3 thousand young people aged 18-24 selected among young activists from children's forums, Mitra Muda and adolescent circles (Unicef nationwide supported youth network and community level groups) participated in co-created activities that were organized in two districts, particularly Bogor in West Java and Tegal in Central Java. These included clean-up actions in both areas that successfully collected 220.63 kg of waste and a competition for small-scale seed funding for climate and environment action at both national and sub-national levels. Three proposals were selected and will be allocated seed funding and coaching/mentoring for the young activists during implementation. Specifically, a project to turn chicken feathers into liquid fertilizer will be implemented in the Sobo beach in East Java. Activities to engage volunteers to reduce waste in the local market area will be implemented in the Bogor district. In the Tegal district, waste collection in and around a school area will be done to transform it into creative products. After this pilot in selected environmentally degraded communities, this youth engagement and action model will be taken to scale in a wider geography and expanded with a private sector mentorship component.

Children's legal empowerment for a healthy environment: advancing climate and environmental justice



UNICEF East Asia and Pacific Regional Office (EAPRO) has released a comprehensive report on children's legal empowerment for a healthy environment. This study highlights that children have legal rights to a safe climate, clean air, a healthy ecosystem, and sustainable use of natural resources. Recognizing the limited access children have to formal judicial mechanisms, the report explores non-legal pathways for children to advance their rights. It incorporates case studies from the region to showcase how children's legal empowerment can be realized in practice.

Importantly, this report emphasizes that in every climate action, it is crucial to uphold the rights of children and ensure their voices are heard and acted upon. The findings of this study have informed the creation of guidance for Malaysia and Indonesia, providing targeted recommendations for children, young people, caregivers, civil society actors, intergovernmental organizations, and States. These recommendations outline a four-step legal empowerment strategy, encompassing education, expression, access to remedy, and safety. By empowering children legally, we can advance climate and environmental justice while safeguarding their rights and well-being.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Conclusion

Children and their families may be able to withstand the impacts of one or two shocks and stresses, but when they occur frequently, and when they vary in nature, it erodes their coping capacities and strategies, increases their vulnerability, pushing the poorest children further into poverty. Moreover, when multiple overlapping shocks interact with each other, or other social, political and economic risks, the cascading impacts become more severe and widespread. All of this ultimately makes the planet a more precarious and riskier place for children to grow, live, learn and play, and drastically reduces the opportunities for them to achieve their full potential.

While we have scientific models to suggest what the future looks like from a climate perspective, the compounding and cascading effects are difficult to predict. Thus, it is crucial for policymakers to address climate change holistically and implement measures that reduce the effects of multiple climate shocks simultaneously. There are a range of actions and tools developed that can be taken to improve children's resilience – principally among them are to improve access to climate-smart social services; ensure policies (both climate and non-climate) addresses the needs of children, and that they have adequate social protection and child protection systems in place; and that anticipatory action and early warning systems are in place. While the existential threat is real, the opportunities to not just avert the climate disaster but to emerge resilient through adapting, rebuilding, improving and regenerating, is a positive reality we can build for all children and their families in the East Asia and Pacific region.

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