

The State of the World's Children 2024

The Future of Childhood in a Changing World

Foreword

In a world facing so many present-day challenges, one might ask why UNICEF is devoting this edition of *The State of the World's Children* to the future, specifically to the world in which children will live in 2050.

To answer that question, it is worth revisiting the first edition of this report, published in 1980.

From that report, the words of one of my predecessors, James P. Grant, UNICEF's third Executive Director and global leader of the child survival agenda, are worth quoting at length:

"An important part of UNICEF's task is to monitor the trends which affect the world's children, to extrapolate those trends into a picture of the future, to re-examine them in order to determine what kinds of changes in the present might improve the future, and to allocate its resources to the points of maximum leverage in bringing those changes about."

In the almost 45 years since those words were written, UNICEF's mission has not changed: We continue to monitor the trends that are shaping and reshaping the lives of children and young people, and we go on working and advocating for change today with the aim of building a better world for the children and young people of tomorrow.

This report picks up the baton of Jim Grant's 1980 report and carries it forward. The theme of that earlier report was 'From here to 2000'; the theme of ours is 'From here to 2050'.

In many ways, the world of 2050 will be very different from today's. It will be a world where, in many high-income countries, children will account for a relatively small share of the population. As we move further into the twenty-first century, the future of childhood will increasingly be in Africa: By 2100, there will be more children on the African continent than anywhere else in the world.

Are we ready for such a world? Africa has made important gains for children in recent decades, but major issues persist, particularly the learning crisis. If Africa does not do more to develop the skills and enormous potential of its children and young people, it risks squandering the possibility of the demographic dividend. Recruiting and training more teachers and equipping them and their students with advanced technologies, including artificial intelligence (AI), may help bridge these learning gaps by 2050. But that potential has not yet been realized.

The challenges facing children and their communities will not be confined to a single continent – they will be global. Overcoming them – and ensuring a bright, secure future for every child – will be made still more challenging by another of the megatrends detailed in this report: the climate and environmental crises.

Sadly, this is not just a future problem: UNICEF estimates that in recent years, the equivalent of about 20,000 children a day worldwide have been displaced by floods and storms exacerbated by climate change. These numbers will only grow, as will the many other deadly impacts of climate change on children's health and development and on their communities.



Catherine Russell

**UNICEF
Executive Director**

The world already knows what it needs to do to limit the worst impacts of climate change. Youth leaders have been forceful – and rightly so – in urging national leaders to stick to their climate commitments. To ignore those calls is to betray the futures of children and young people. We cannot allow that to happen.

Even if the world of 2050 is different from today's, and it will be, it also risks being more of the same. We continue to live in a world where children's lives are being devastated by war, conflict and violence – in the Democratic Republic of the Congo, Gaza, Haiti, Lebanon, Myanmar, the Sudan, Ukraine and others. The list is depressingly long. We also continue to live in a world where far too many children suffer poverty and discrimination and where women and girls are subjected to gender-based and sexual violence and deprived of opportunities to meet their full potential.

These multiple assaults on the well-being, security and dreams of children fly in the face of commitments made in the Convention on the Rights of the Child (CRC), adopted exactly 35 years ago. By ratifying that framework, the world's leaders acknowledged that all children have inalienable rights. And they promised that their governments would protect and uphold those rights. Sadly, those promises often fall far short.

In the face of such headwinds, it is easy to feel defeated. But nothing is set in stone. The gloomiest scenarios are not inevitable. We can set a course that will take us to a better world for our children and young people.

We know from the tangible progress we have achieved so far that we can build a better world for children. With resolve and global cooperation, we can shape a future where every child is healthy, educated and protected. Our children deserve no less.

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Introduction

From here to 2050



The future is now.

The carbon we pour into our atmosphere today will shape the climate of the future.

The technologies we develop today – and the policies we develop to govern them – will help shape how we learn, work and communicate. They will affect the well-being of our children.

The demographic trends of today will help shape the population patterns of societies tomorrow.

So, the future is now – we are laying its foundations today.

It is important that we ask ourselves: What will be in that future? What will the world be like for children in 2050? And what can we do today to ensure the best possible future for every child?

These are the questions at the heart of this year's *The State of the World's Children* report.

Megatrends transforming our world

We cannot know for certain what the future holds. But we can examine the forces and trends shaping our world today and reflect on how they might shape the future.

No list of these elements can be complete; after all, our world is complex, and so are the forces and trends shaping it. For example, in the years since the pandemic, a collision of political, social and economic trends has fuelled a global 'polycrisis' made up of intensifying challenges to democracy, fragmentation in the multilateral system and a debt crisis, which is "unsustainable and a recipe for social unrest", according to United Nations Secretary-General António Guterres.¹

Important commitments on many of these issues were made at the United Nations Summit of the Future in September 2024. The Pact for the Future, adopted at the Summit, states that the success of future generations is contingent on "eliminating the intergenerational transmission of poverty and hunger, inequality and injustice, and acknowledging the special challenges faced by the most vulnerable countries."²

From the long list of forces and trends shaping the world, this report focuses on three long-term, global **megatrends**: demographics, climate and environmental crises, and frontier technologies. These were chosen because UNICEF and other major actors – including other United Nations agencies and leading private sector analysts³ – believe they will be critically important in shaping the world for children (see *Chapter 1*) over the next quarter of a century.

A global **demographic transition** is moving us towards a world where the number of children is plateauing – by the 2050s, the world will be home to about as many children as it is today, around 2.3 billion. In some societies, children will account for fewer than 1 in 10 members of the population, raising questions about their visibility and respect for their views and rights. In others, large populations of children and young people will offer potential demographic dividends. In the coming decades, urbanization will continue to rise.

The second megatrend is the **climate and environmental crises** – a complex mix of crises involving climate change, pervasive pollution and biodiversity loss – that are already reshaping our world.⁴ Their impacts will only grow. For example, exposure to raised temperatures

It is important that we ask ourselves: What will the world be like for children in 2050?

because of heatwaves poses a particular risk to children's health and well-being. More children will be at risk of chronic respiratory problems like asthma and cardiovascular diseases. And they will be living in places at greater risk of exposure to droughts, cyclones and floods, where a lack of safe water and food could become the new normal.

The final megatrend is **frontier technologies**, which will continue transforming whole swathes of our lives. Connectivity and digital skills could equip millions of children for the economy of the future. Artificial intelligence (AI) and neurotechnology may drive sweeping change in education and health care. Green technologies have the potential to limit the worst impacts of climate change and support the transition to a low-carbon, more sustainable future. Vaccine and medical breakthroughs could save millions more children's lives. But these visions of technology's upsides can only be realized with the right incentives, governance and accountability mechanisms in place. Otherwise, we can expect missed opportunities or even negative impacts on children.

Young voices

Children have the right to express their views – including on matters that affect them. Throughout this report about the future of childhood, we share the perspectives of children and young people in their own words. Some comment on the megatrends and their impact on children today and in the decades to come. Others share their vision for a sustainable, equitable and peaceful future – and their thoughts on how to achieve it.

SOWC 2024 gathered these perspectives from a UNICEF U-Report global survey,⁵ as well as from the 2023 Youth Foresight Fellows – a group of young foresight practitioners working with UNICEF Innocenti – Global Office of Research and Foresight.⁶

The world's children in 2050

Drawing on these three megatrends and many other socioeconomic indicators (see Chapter 2), UNICEF commissioned the Wittgenstein Centre for Demography and Global Human Capital to analyse scenarios using the Shared Socioeconomic Pathways (SSPs) model to explore how the world might look for children in 2050.

These scenarios are not predictions, but an exploration of possibilities based on different assumptions about the future. They reflect a certain level of variability in areas like economic growth and demographic trends, among others. What they cannot reflect are the unknowns – such as possible pandemics, economic shocks and technological game changers. In other words, the world is unpredictable: After all, who in March 2019 could have predicted that, within a year, children around the world would be locked out of school because of a global health crisis?

Each possible future reflects a world that is very different from today's. For example, in a business-as-usual scenario based on current trend lines, children in the 2050s will live in societies with fewer children and more adults. More of the world's children will live in Africa, more will live in cities and more will go to school. Many are projected to live in communities that are at lower risk of prolonged subnational conflict and that have made some progress towards achieving gender equality.

Overwhelmingly, however, the children of 2050 will live in places that are far more exposed to climate risks. The numbers in the business-as-usual scenario are stark: About eight times as many children are projected to live in countries at high risk of exposure to extreme

These scenarios are not predictions, but an exploration of possibilities based on different assumptions about the future.

heatwaves in the 2050s, compared with the number of children exposed at the start of the century. The consequences for children's health and well-being and for the stability and resilience of their communities are profound.

Other scenarios are even more worrying. They are potential futures where, based on the decisions made today, the share of children completing primary schooling in the 2050s is lower; where barely one in two children completes secondary education; where more children live in poorly resourced settings than do today; and where the risk of exposure to extreme heatwaves is projected to be 13.5 times higher.

The next 25 years

Such visions of the future must give us pause. But they should not fill us with despair. For there are other, much more optimistic, scenarios for how the future could unfold. We don't just need projections to tell us this, we can take lessons from history.

Consider the progress of this past half-century alone: Under-5 mortality has dropped 60 per cent in the past 30 years and malnutrition has decreased by 45 per cent.⁷ And, despite the setbacks of the pandemic period, rising vaccination coverage has saved countless lives – an estimated 31 million lives through measles immunizations alone.⁸

But this report sets its eyes on the future. As we near the end of the first quarter of the twenty-first century, we look to the next 25 years, to the year 2050, and ask ourselves: How can we best secure a future for the children of 2050 in which they survive, thrive and meet their full potential?

Young voices

"Our future hinges on your decisions today. Embrace renewable energy, protect biodiversity, and invest in health care and education. Let's build a world where prosperity is shared equitably, and where every individual can thrive."
U-Reporter, 20, male, India

Setting our course

Our guide for building the best possible future for every child must be, first and foremost, the Convention on the Rights of the Child (CRC). Adopted 35 years ago, the CRC has supported the betterment of countless children's lives around the world. The CRC remains as relevant as ever today, at a time when the dangers to children threaten "to undermine the integrity of international standards pertaining to children", in the words of Secretary-General Guterres.⁹ It is consistently a touchstone for governments, the United Nations, multilateral systems, businesses and civil society as they develop policies, approaches and practices to the challenges of today and tomorrow.

The CRC's core principles are clear: **Non-discrimination** underlines the duty to serve the needs of – and to provide opportunities to – every child. The intention to serve the **best interests** of the child represents a litmus test for decisions taken by legislature, courts of law, businesses and other actors where they relate to children's well-being. The **right to life, survival and development** emphasizes the need to support every facet of a child's growth, including their physical and mental health and their social and cultural situation. And the principle to foreground the **views of the child** reflects the importance of ensuring children's voices are heard and taken seriously in matters that affect them.

These principles are reflected in this report's recommendations for how to meet the challenges and opportunities posed by the megatrends of today and tomorrow (see *Chapter 3*). These recommendations include:

- As more societies move through the **demographic transition**, investment in health, education and skills will be vital to harness the potential demographic dividend. In an increasingly urban world, we also need to focus on developing cities that are more sustainable, resilient, clean, safe and nurturing for children. In addition, in societies where adults increasingly outnumber children, we must find innovative ways to ensure rights and equity across generations.
- The **climate and environmental crises** demand action on multiple fronts. We need to develop and expand climate-resilient infrastructure, especially for schools, health-care facilities and emergency shelters, and improve the resilience of essential services such as nutrition, social protection, education, and water, sanitation and hygiene. We need to invest in green energy to accelerate the transition away from fossil fuels and protect children from hazards such as air pollution, toxic metals, chemicals and hazardous waste. And we need to ensure that children's unique vulnerabilities and needs are reflected in environmental decision-making, including climate financing, policy and planning.
- To meet the challenges and take advantage of the possibilities of **frontier technologies**, we urgently need to bridge the digital divide and build children's digital skills, especially in societies where generations of children are being left behind in the digital revolution. Governments and businesses also need to invest in technology designed to benefit children, safeguard them and protect their best interests, while taking into account the needs and views of children themselves. Laws must be adopted or updated to protect children against the risks of emerging technologies.

The megatrends with which the world is contending will affect the lives of everyone. But no one will feel their impact more than our youngest generations. They must be empowered to be agents of change as we take on these challenges. That is why the priorities set out above reflect, in part, the thinking of the many young people who have worked with UNICEF Innocenti – Global Office of Research and Foresight to imagine the future and how we can shape it for the better. Their voices and views are reflected throughout this report.

Our responsibility

Anyone who reads the headlines knows that we are facing a major, collective struggle to solve the problems of today. Some might wonder, then, about the wisdom of trying to take on the challenges of tomorrow. But these are, in fact, also the challenges of today – and they urgently need our attention if we want to improve children's lives now and in the years ahead.

Why should we address these challenges?

The best answer comes from 15-year-old Aliaksandr Piatrou, who wasn't yet born when this century started. As part of a letter-writing competition organized by UNICEF and the Universal Postal Union, he pledged to future generations: "As your predecessor, I understand that I have a huge responsibility for your wonderful future. I promise to do everything possible so that you can live in a happy, cloudless world."¹⁰

The future is now, and our responsibilities are clear. Now is the time to shape a better future for every child.

The future is now, and our responsibilities are clear.

Chapter 1

Three megatrends shaping children's futures



To understand how the world's children will live in 2050, we examine three forces that will shape their lives in the next quarter-century: demographic shifts, the climate and environmental crises, and frontier technologies.

These three interconnected megatrends – long-term, global forces of transformation¹ – are already profoundly impacting children's lives. As other global institutions and businesses have recognized, the influence of these megatrends will only grow.² Each one will impact children's daily experiences by 2050 – how they live, learn, interact and develop. The megatrends are:

- **Demographic transition:** In the coming decades, all parts of the world will experience population ageing, but the number of children will grow dramatically in some regions. Such shifts demand urgent policy and resource adjustments to address the needs of children in evolving population structures and environments. Implementing effective education, health and social programmes that are tailored to these emerging demographic realities is essential.
- **The climate and environmental crises:** The triple planetary crisis of climate change, biodiversity loss, and pervasive pollution and waste have propelled the planet and humanity to a critical tipping point.³ The world is not on track to reach net zero emissions by 2050, which is the goal set by the Paris Agreement to preserve a liveable planet.⁴ Further delays to action will intensify the impact on children, as they will raise the costs of adaptation and mitigation. Bold measures must be promptly implemented to safeguard current and future generations.⁵
- **Frontier technologies:** Many transformative technologies are advancing at an exponential rate.⁶ To ensure that every child can take advantage of these breakthroughs – from AI to green technologies – the necessary infrastructure and resources must be put in place. To ensure every child is protected from the risks associated with these technologies, the necessary laws and governance structures must also be put in place. Regulations and strategic incentives for technology, pharmaceutical and green energy companies are also needed to maximize benefits for every child, while mitigating potential inequities or harms.

These three megatrends will have profound, long-term impacts on economies, societies and the planet – and the world's children. Their convergence will create ripple effects across society and impact other crucially important trends like inequality, migration and urbanization. For example, demographic shifts and climate change directly influence migration patterns and urban growth, while the interplay of all three megatrends has a knock-on effect on economic and financial conditions and policy decisions that contribute to inequality.

By focusing on these key drivers of change, we can better grasp their far-reaching consequences for children, today and tomorrow, and address the complex challenges that will shape the future for generations to come.

These three megatrends will have profound, long-term impacts on economies, societies and the planet – and the world's children.

Young voices

"The future isn't just about shiny new technologies. In many contexts it's about something far more basic, [like] the need for infrastructure to cope with the realities of global heating. Rising temperatures are already threatening children's right to education and play."

Ijun Kim, 27, Senior Youth Foresight Fellow, Republic of Korea

Demographic transition



The future of childhood is directly linked to historic demographic shifts underway in the world today. Human beings are living longer, having fewer children and moving frequently within and between countries. These patterns, and the way in which they differ across regions, will fundamentally shape children's lives in the future, and will hold both opportunities and threats to their well-being.

The statistics in this section are based on estimates and projections by the United Nations Department of Economic and Social Affairs, which consider three factors: mortality, fertility and international migration.⁷ Changes in the first two factors are central to the demographic transition.

How many children?

In the 2050s, the number of children under age 18 in the world is predicted to be roughly the same as today: about 2.3 billion. However, depending on future patterns of fertility, mortality and international migration, the eventual number may actually lie between 1.7 billion and 3 billion (see *Figure 1.1*).

Meanwhile, the adult population is projected to grow to around 7.5 billion in the 2050s. Globally, the population of older persons, and the share of older persons, will grow.⁸ By 2050, the number of people over the age of 65 will have reached about 1.6 billion – this

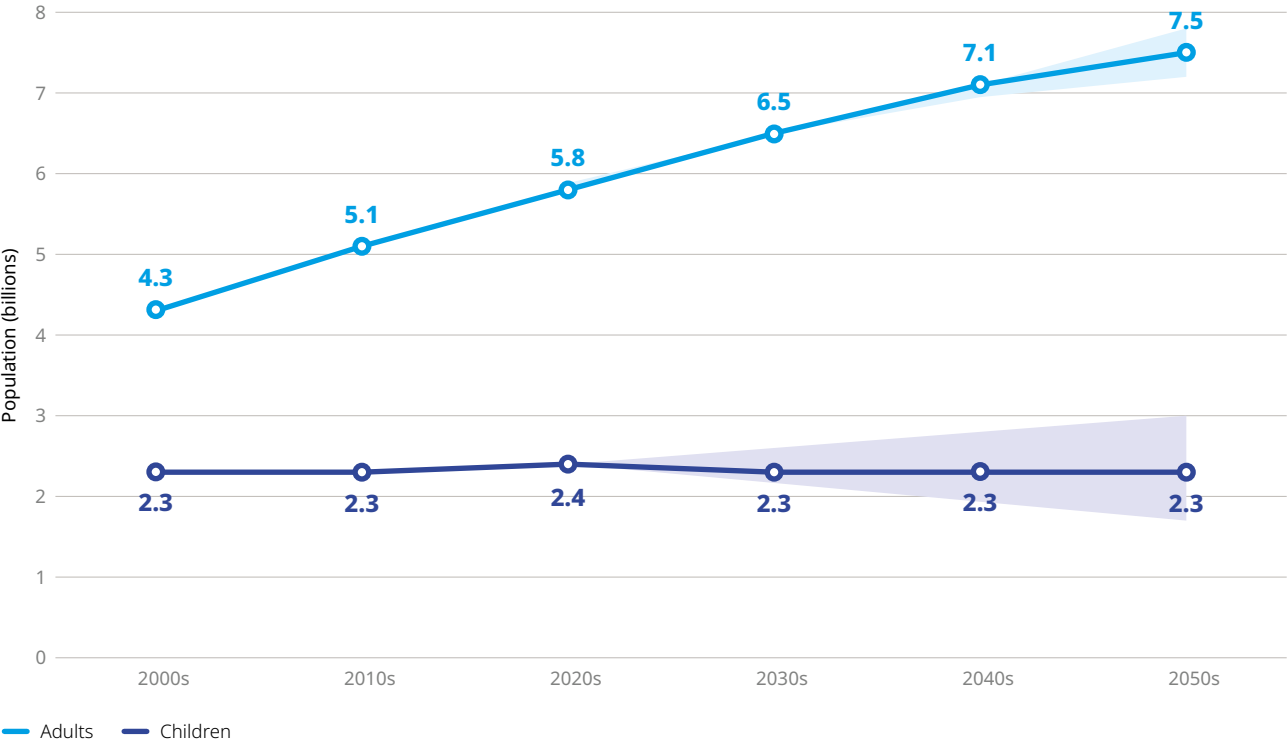
is more than double the figure from 2021 (761 million), with the share rising from 1 in 10 people to 1 in 6.⁹

The stable projections of the total number of children conceal a regional shift. In the 2000s, the largest child populations were in South Asia, East Asia and the Pacific, and Latin America and Caribbean. In the 2050s, however, most of the world's children will live in Eastern and Southern Africa, West and Central Africa, and South Asia, regions that currently contain most of the world's poorest countries.¹⁰

By the 2050s, more than a third of the world's children will live in four countries: China, India, Nigeria and Pakistan. And just 10 countries will be home to half of the world's children (see Figure 1.3). India and China will remain the two countries with the most children in the 2050s, with an average of 350 million in India and 141 million in China. Nonetheless, the number of children will have dropped by about 106 million in India and by 203 million in China.

Note: The solid line shows the medium (or baseline) variant; the shading shows the range from low to high variants.
Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects, 2024 revision (WPP 2024)*.

Figure 1.1 Patterns of growth and plateaus in child and adult populations from the 2000s to the 2050s

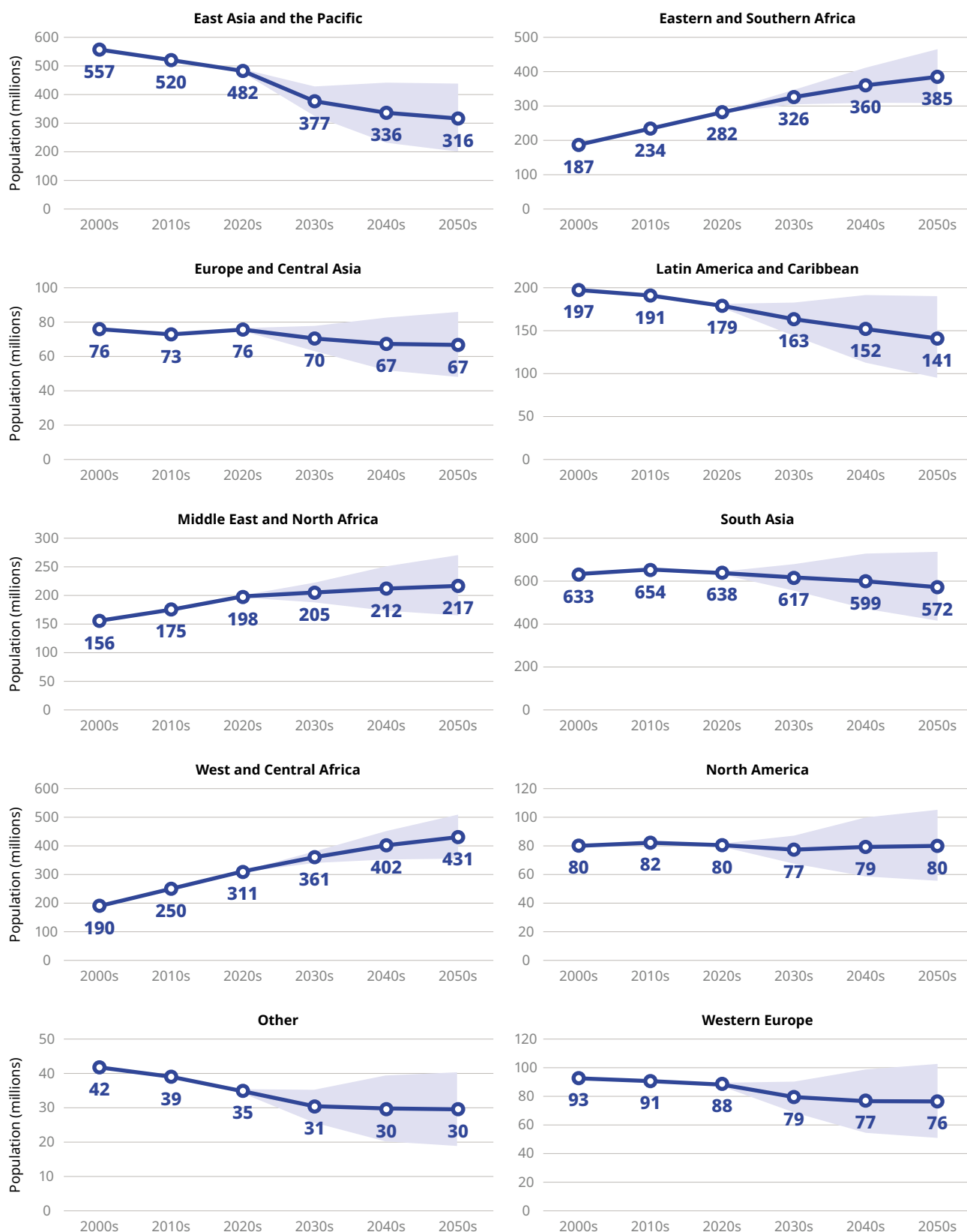


Demographic transition

The 'demographic transition' refers to the combined result of longer lifespans and smaller family sizes.¹¹

- The early stage of the transition features population growth fuelled by dropping mortality rates and high fertility rates.
- In the next phase, there are higher numbers of births than deaths and population growth continues.
- Population growth then flattens as birth and death rates come into balance at lower levels.
- Subsequently, if fertility drops below the replacement rate (2.1 live births per woman),¹² the number of births will be fewer than the number of deaths and the population will shrink.¹³

Figure 1.2 Child population in the 2000s compared with child population in the 2050s in low-, medium- and high-variant trajectories, by region



Note: See technical annex for a list of countries in each region; shading shows the range from low to high variants.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital, based on data from the United Nations, Department of Economic and Social Affairs, Population Division, *WPP 2024*.

Figure 1.3 Countries with the largest number of children in the 2050s, medium variant

Country	Number of children (millions)	Share of children in country population (%)	Share of global child population (%)
India	350	20.7	14.9
China	141	11.7	6
Nigeria	132	35.0	5.6
Pakistan	129	32.9	5.5
Democratic Republic of the Congo	101	42.0	4.3
Ethiopia	82	34.1	3.5
United States	73	18.9	3.1
Indonesia	72	22.4	3.1
United Republic of Tanzania	56	39.4	2.4
Bangladesh	49	22.5	2.1

Figure 1.4 Countries with the largest share of children in the population in the 2050s, medium variant

Country	Share of global child population (%)	Number of children (millions)
Chad	42.5	18
Central African Republic	42.3	5
Democratic Republic of the Congo	42	101
Somalia	41.6	17
Mali	41.2	21
Angola	40.5	33
United Republic of Tanzania	39.4	56
Niger	39.3	22
Mozambique	38.7	27
Côte d'Ivoire	38.4	23

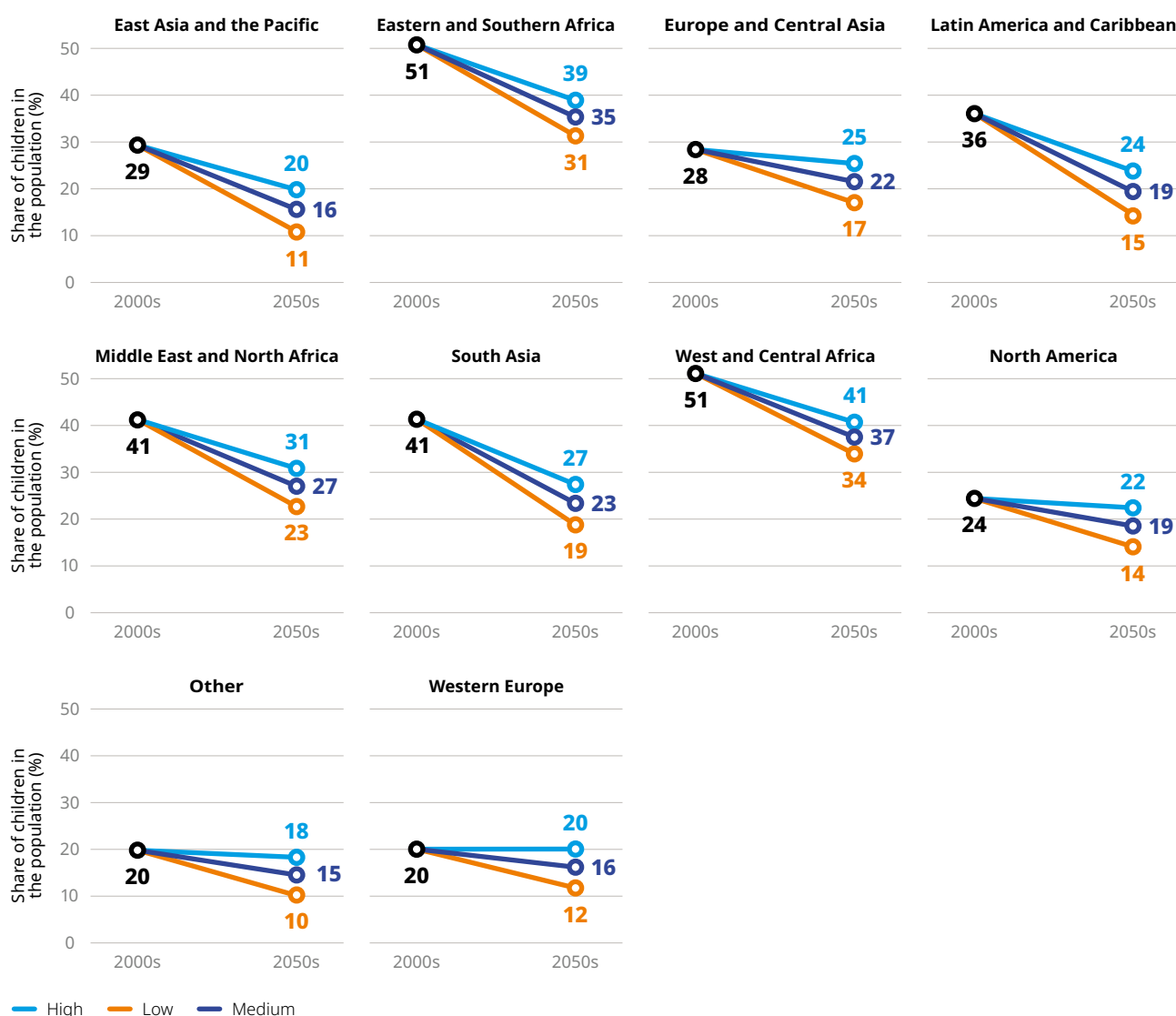
While the number of children in the world may be stable, the share of children in the population is expected to decrease in every region in all scenarios (see *Figure 1.5*). In Eastern and Southern Africa and West and Central Africa, the share of children will fall from around 50 per cent in the 2000s to less than 40 per cent in the 2050s. In other regions, less than a third of the population will be under 18, and in three regions – East Asia and the Pacific, Western Europe and Other – only around one in six people will be a child.

Conditions for a demographic dividend

Another indicator that can help us understand the potential impact of these demographic shifts is the dependency ratio, which is the combined number of children (under the age of 15) and older people (aged 65 and over) compared with the number of working-age adults (aged 15 to 64).¹⁴ When the share of working-age adults in the population grows, the dependency ratio falls, creating opportunities for economic growth – often referred to as a ‘demographic dividend’.



Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital based on data from the United Nations, Department of Economic and Social Affairs, Population Division, *WPP 2024*.

Figure 1.5 Three trajectories for the share of children in populations from the 2000s and the 2050s, by region

Between 2025 and 2050, the dependency ratio is expected to fall in West and Central Africa and Eastern and Southern Africa, from very high levels by global standards, creating the potential for this economic boost.¹⁵ However, patterns vary and the least-developed countries tend to experience a slower demographic transition, and hence more limited opportunities.¹⁶

Dependency ratios will be stable in two regions – the Middle East and North Africa and South Asia.¹⁷ For countries that have already completed the demographic transition, dependency ratios may rise, though the trajectory will depend heavily on labor force participation rates and other socioeconomic factors.

Shifting populations

International migration is also a critical aspect of trends shaping the future of childhood.¹⁸

In 2020, an estimated 281 million people migrated internationally, including 36 million children.¹⁹ Migration can offer benefits for children through increased safety from conflict and climate crises, as well as improved educational opportunities. But it also carries dangers, including increased risk of exploitation and separation from caregivers.



Note: See technical annex for list of countries in each region.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital based on data from United Nations, Department of Economic and Social Affairs, Population Division, WPP 2024.

Population movements within countries – including urbanization and internal displacement – are not covered in the above estimates, but they are also important factors shaping childhoods. Between the 2000s and the 2050s, the percentage of children living in cities is projected to rise by a third, reaching 1.3 billion in the 2050s. By this point, three in five children are expected to live in urban settings. Urbanization and its consequences for children are discussed more fully in Chapter 2.

At the same time, it is estimated that 117 million people are currently displaced.²⁰ In 2023, 20.8 million children were newly displaced within their countries, mostly because of conflict and disasters.²¹ Amid increasing environmental disruptions, these figures are likely to grow.

Young voices

“Entering a new phase of our world is hard indeed. However, choose humanity and empathy to help create a better future for all of us.”

U-Reporter, 16, female, Indonesia

Implications for children

Looking ahead to 2050, the demographic shifts described above will have profound effects on childhood and present opportunities and threats to children's well-being. These effects will vary according to each country's context and the stage it has reached in the demographic transition.

Whether a country will be able to take advantage of the potential demographic dividend depends on whether it makes the investments needed for inclusive economic growth. In countries with a rising proportion of working-age individuals – like many in sub-Saharan Africa – the priorities should be on education, health care and job creation to capitalize on their demographic advantage while expanding opportunities for all segments of society.

By contrast, many developed countries, having already benefited from their demographic dividend, will need to support an ageing population. However, it will still be vital to maintain child-responsive spaces, all while meeting the needs of an ageing population and a growing number of single-person households.²² In other words, even as children make up a smaller and smaller share of the population, their needs must remain priorities. Education, health care and social services – including birth registration – and public services such as schools, childcare and leisure facilities must remain available and accessible. In addition, while an ageing population will undoubtedly present challenges, nations can leverage their resources to adapt. With the right support in place, demographic changes can bring new prospects for intergenerational dialogue and cooperation.

Children's close relationships will also be affected. They will be less likely to grow up with many, or any, siblings. On the other hand, increasing life expectancy will mean that ongoing relationships with grandparents – often highly valued by children – may become more common. Digital technologies may also play an increasingly important role in enabling children to maintain friendships with people of their own age.

The demographic shifts described above will have profound effects on childhood and present opportunities and threats to children's well-being.

The climate and environmental crises



With humanity breaching critical ecological limits, children now are coping with a more unpredictable, hazardous environment than children of any previous generation.²³ Amid climate destabilization, biodiversity collapse and widespread pollution, the world faces a triple planetary crisis, with risks that will only intensify in the future.²⁴

From before they take their first breath, children are impacted by their environment.²⁵ Their developing brains, lungs and immune systems are uniquely susceptible to pollution, disease and extreme weather.²⁶ As they grow, every realm of children's lives – from education to nutrition, from safety and security to mental health – is shaped by the climate and environment.

The scale and scope of the problem is alarming. Approximately 1 billion children – nearly half of the world's children – live in countries that face high risk of climate and environmental hazards.²⁷ Air pollution ranks as the second leading risk factor for death in children under age 5.²⁸ Global warming has led to rising sea levels, a particular hazard for Small Island Developing States.²⁹ Access to safe drinking water is at ever-increasing risk, especially for the most vulnerable children.³⁰ Heatwaves, wildfires, droughts, tropical storms and biodiversity loss pose additional threats. As a result, few children in the world live free of mounting climate and environmental risks.³¹

Environmental degradation and systemic shifts are also creating new interactions between people and the environment.³² Signals of this change include the potential for harmful chemicals and materials to impact health, immune function and fertility;³³ emerging zoonotic diseases and higher risk of pandemics;³⁴ and eco-anxiety among children and young people that gives rise to isolation and loneliness.³⁵

Failing to protect children from the climate and ecological crises is a violation of their rights, as affirmed by the United Nations Committee on the Rights of the Child in General Comment 26.³⁶ The Committee recognizes climate and environmental hazards as “an urgent and systemic threat to children’s rights”, and affirms children’s right to a clean, healthy and sustainable environment.³⁷

Impacts on children

Safeguarding these rights today and into the future means both recognizing the hazards that children face and understanding their impact. Taken together, climate and environmental hazards, biodiversity degradation, and widespread pollution have a profound impact on children’s lives.

Health

The planetary crisis threatens children’s health and well-being on multiple levels. First, it puts more children at risk of disease. For example, rising average temperatures have led to an increase in mosquito populations and greater risks of diseases like malaria, dengue, Zika and West Nile virus.³⁸

Children’s access to clean water is also at risk. Rising floodwaters can damage infrastructure, leading to contaminated water supplies and increases in waterborne diseases, which represent a leading cause of death among children under the age of 5.

Extreme weather also directly affects children’s access to a diverse, healthy diet. For children and pregnant women, lack of diet diversity and food scarcity can lead to a greater risk of disease. It is also linked to poor developmental outcomes in children.³⁹ Food insecurity is predicted to increase as the climate crisis worsens.⁴⁰

Air pollution is especially harmful for children, and its effects can last a lifetime.⁴¹ Scientific evidence shows that air pollution can contribute to adverse birth outcomes, infant mortality, damaged lungs, asthma and cancer, and it is linked to the risk of neurological disorders and childhood obesity.⁴²

Young voices

“Imagine ... a future where climate change and harsh conditions will lead schools to turn into night mode, forcing everyone to only study at night because of unbearable conditions during daytime.”

Mamadou Doucoure, 24, Youth Foresight Fellow, Mali

Mental health can also be disrupted by extreme weather events. Exposure to extreme weather events in childhood can be extremely traumatic.⁴³ What’s worse, children often have a lack of agency in these situations, heightening potential trauma:⁴⁴ Parents, teachers or caregivers make decisions on their behalf, which enhances feelings of helplessness in the face of climate shocks.⁴⁵ Notably, extreme heat, tornadoes, hurricanes, floods and

As they grow, every realm of children’s lives – from education to nutrition, from safety and security to mental health – is shaped by the climate and environment.

earthquakes have been linked to a range of mental health issues, including post-traumatic stress disorder and/or depression.⁴⁶ Children and young people around the world have also displayed widespread climate anxiety due to worries about the catastrophic effects of climate change and a sense that not enough is being done to address problems.⁴⁷

Education

Climate and environmental hazards can have profound effects on children's education.⁴⁸ Climate shocks can close, damage or destroy schools, hindering children's opportunities to learn and grow. Since 2022, more than 400 million students around the world have experienced school closures due to extreme weather.⁴⁹ From extreme heat in India, Pakistan and South Sudan to wildfires in the United States of America, from cyclones in Malawi to flooding in the Philippines, the climate crisis is undermining children's right to education.⁵⁰ Climate-induced school closures are also widening learning gaps worldwide.⁵¹

Climate shocks also keep children from learning by affecting attendance. Far too often, climate hazards bring disease or demand changes in a child's daily life. In extreme cases, climate hazards force children to flee their homes and abandon their education.

In addition to violating child rights, this inhibits learning and stifles economies. The World Bank recently called the educational impacts of climate change an "economic time-bomb."⁵²

One of the keys to defusing this bomb is doubling down on education – more specifically climate education. Children have the right to understand climate change – an issue that affects them disproportionately. Education is the single strongest predictor of climate change awareness.⁵³ An additional year of education increases climate awareness by 9 per cent, according to analysis of 96 countries.⁵⁴ And beyond raising awareness, education drives individuals to take action on climate change, including by adopting responsible consumerism.⁵⁵

Unfortunately, children and young people around the world feel that their knowledge of climate change is insufficient, and that they are not prepared to address its impacts.⁵⁶ A UNICEF–Gallup poll found that on average, 85 per cent of young people aged 15–24 surveyed in 55 countries said they have heard of climate change, yet just 50 per cent of those chose the correct definition of the concept.⁵⁷

Climate change knowledge among young people was found to be lowest in lower-middle- and low-income countries, many of which are the most vulnerable to the impacts of climate change.

Strategic investments are needed to safeguard children's right to understand the climate crisis, and to equip them to engage in advocacy, mitigation and adaptation. More national school curriculum frameworks need to address to climate change.

Children and young people around the world feel that their knowledge of climate change is insufficient.

Displacement

Climate and environmental hazards are directly linked to the displacement of children from their homes. Displacement – whether short-lived or protracted – can exacerbate the dangers caused by climate and environmental hazards.⁵⁸ When children are displaced from their homes, they are at higher risk of becoming separated from their parents or caregivers, amplifying various other risks, including exploitation, child trafficking and abuse. Furthermore, displacement disrupts education and exposes children to health risks from malnutrition, disease and inadequate immunization. For children in areas of significant poverty, conflict and fragility, deprivations are multiplied.⁵⁹

Climate and environmental hazards will be a defining aspect of the future of childhood. Protecting children today and tomorrow demands immediate, sustained, renewed and sincere efforts to lower emissions, reduce the pace of global warming, and transition to cleaner and renewable energy sources. It also requires climate and environmental adaptations to lessen the harms, disruptions and displacement that children and families are experiencing around the world. To implement these changes, governments and the global community must take decisive action, putting children's health and well-being at the centre of climate policy, investment and more.

The planetary crisis also ripens conditions for conflict and can exacerbate its harms to children. A scarcity of water, arable land and energy resources can escalate tensions, especially in areas already coping with political instability. Conflict, in turn, harms ecosystems – and the livelihoods, security and health of children and families.⁶⁰

Climate and environmental hazards will be a defining aspect of the future of childhood.

Frontier technologies



Frontier technologies promise dramatic improvements for the lives of children. Connectivity and digital skills, when used correctly in learning environments, could equip millions for future jobs, boosting economies and breaking generational cycles of inequality. AI and neurotechnology could drive transformations in education and health care. New vaccines promise protection from deadly diseases. And green tech offers ways to mitigate and adapt to the climate crisis. These are only a few examples of the opportunities frontier technologies can offer. But there are also risks such as invasion of privacy, exposure to harmful content and misuse of personal information. Both the opportunities and risks demonstrate why we must take a future-focused approach to realizing child rights.⁶¹

Frontier technologies promise dramatic improvements for the lives of children.

Young voices

"A future ambition is a connected and sustainable society where technology plays a central role in improving the quality of life and promoting social inclusion. Where universal and regional connectivity becomes a reality."

Abril Perazzini, 19, Youth Foresight Fellow, Argentina

Digitalization

Already changing the future of work, education, health care, energy and more, digitalization also has the potential to add trillions of dollars in value to the global economy.⁶² But technology alone will not make a better world: Its promise can only be fulfilled if societies, governments and companies embed child rights into the design and application of innovations.

To be unconnected in a digital world is to be deprived of opportunities in the present and potential in the future. In Europe, an estimated 90 per cent of jobs require basic digital skills, in addition to basic literacy and numeracy.⁶³ By 2030, more than 230 million jobs in sub-Saharan Africa will require digital skills.⁶⁴ Soft skills like critical thinking, reasoning and socio-emotional skills will also be key; these are skills that machines will not have. Children need to learn how to safely leverage such tools from an early age, both for their ongoing education and future work prospects. Children who can spend more time online and engage in a wider range of online activities develop better digital skills.⁶⁵

Yet most young people in low- and middle-income countries are not connected, have limited digital skills and do not own a mobile phone. Overall, more than 95 per cent of people in high-income countries are connected to the internet, compared with barely 26 per cent in low-income countries.⁶⁶ Infrastructure limitations, high costs and permission barriers continue to impede progress.

The divide is particularly stark for certain groups: In low-income countries, 9 out of 10 girls and young women aged 15–24 are offline.⁶⁷ Even in high-income countries, adolescents aged 15–16 in the poorest households are nine times more likely to be unconnected than their wealthier peers.⁶⁸

The internet cannot be accessed without electricity. Absent or unreliable electricity and inadequate infrastructure therefore exacerbate the digital divide. In Africa, 63 per cent of the population owns a mobile phone but only 37 per cent uses the internet.⁶⁹ Weak infrastructure (lack of electricity or signal), costs (of data and devices), the need to share devices and not having an adult's permission to use the internet, especially for children, continue to represent persistent barriers to connectivity.⁷⁰

Low-connectivity countries today would benefit from accelerating progress towards universal connectivity. Failure to remove barriers for children in these countries, especially for those living in the poorest households, means letting an already disadvantaged generation fall even further behind.

The rapidly growing child population in Africa's regions calls for immediate action. However, knowledge gaps – such as how to best leverage digital technologies as part of formal education led by trained teachers – still urgently need to be addressed. The potential for digital technologies to improve educational outcomes can therefore not be dissociated from the investments that are urgently needed in order to recruit and train more teachers and maximize learning time for children, as underlined in the next chapter.

To be unconnected in a digital world is to be deprived of opportunities in the present and potential in the future.

Young voices

“In 2050, artificial intelligence will redefine the world we live in today. Please use it responsibly, to create a fair, innovative and sustainable society, where technology serves the common good and does not create inequalities.”
U-Reporter, 16, female, Romania

At the same time, digital technologies expose children to a wide range of risks and harms. The risks are only expected to increase as more children are online and technologies become more immersive and integrated into children's lives. Digital technology increases children's vulnerability to privacy risks, including misuse of personal information and exposure to harmful content.

Without sufficient awareness and skills to navigate online spaces safely, and appropriate policies to protect users, people can be easy targets for exploitation and cyber threats. In addition, the rapid pace of technological advancements can outstrip the development of protective measures, leaving gaps in security. Protecting children's privacy requires that governments enforce strong safeguards that hold the technology industry accountable for creating safer digital environments.⁷¹

Efforts to address online harms to children face significant policy and regulatory challenges. The rapid increase in online sexual exploitation and abuse of children is proving to be a major stumbling block for national and global prevention, child protection and legislation. In addition, harms from AI-generated child sexual abuse material (CSAM) present a new and urgent problem, as law enforcement cannot easily distinguish real CSAM from AI-generated material.⁷²

Low-connectivity countries have an opportunity to learn from three decades of lessons and mistakes in well-connected countries, which could allow them to get ahead of this rising tide of online harms. Still, these highly complex issues require significant financial investment and continuous research to understand how digitalization continues to change childhood in all settings.

Looking ahead, the children of 2050 will face additional challenges and opportunities in the space of frontier technology. Some are well known; for example, we can already predict many challenges related to digital learning or online protection. Others are unpredictable or more difficult to foresee, and therefore require an anticipatory approach to policymaking.

Commitment to child rights is essential to these efforts. In the 2021 General Comment 25, the Committee on the Rights of the Child outlined child rights in relation to the digital environment, which can serve as a guide for essential policies and approaches to digitalization and children.

Neurotechnology

By directly interacting with the brain or nervous system, neurotechnology devices or software serve as an interface with the outside world. They combine neuroscience with technology to monitor brain activity, stimulate areas of the brain or interpret brain signals. Examples of neurotechnologies include non-invasive headbands that measure brain activity for attention or wrist bands that monitor heart rate, stress levels and sleep patterns.

Young voices

"It is crucial for leaders to enact policies and regulations that ensure the ethical and responsible use of AI and technology. This includes promoting transparency, accountability and fairness in the development and deployment of AI systems."

U-Reporter, 22, male, United Republic of Tanzania

At the same time, digital technologies expose children to a wide range of risks and harms.

Neurotechnologies have the potential to, for example, personalize education – adapting teaching strategies to individual children's learning patterns and needs – and improve health care through better diagnosis and treatment for children with neurological, psychiatric and physical disorders.⁷³

Yet, neurotechnologies can be misused. It is not difficult to imagine dystopian scenarios where neurotechnologies are used to undermine children's cognitive liberty; companies exploiting children's purchasing habits to inform product development; governments surveilling children's thoughts and punishing them or swaying their worldviews; or military groups recruiting children into armed or terrorist activities. In the hope of giving their children an advantage, parents and caregivers could also authorize the use of cognitive enhancement neurotechnologies without obtaining the child's consent or understanding the long-term consequences. Given large global wealth and power disparities, reaping the benefits and minimizing the risks requires urgent regulatory and governance reform.

Artificial Intelligence

AI systems have the potential to support learning and teaching practices, and to introduce outlets for children to express themselves, play and think creatively. However, if the data used to train AI systems do not reflect children's varied characteristics, those systems will reinforce historic patterns of systemic bias and discrimination. Children with disabilities and those from marginalized groups, including racial and ethnic minorities, are especially vulnerable to biased algorithms.⁷⁴

Young voices

"We must integrate our human journey with AI, as almost all jobs will change due to this technology. It is important to learn how to harness it. I envision myself in 2050 as a physician, with my career enhanced by these new techniques."

U-Reporter, 18, male, Colombia

For example, large language models (LLMs) that are trained on major global languages, such as English, Chinese and Spanish, are not accessible to millions of children around the world who use different native languages, known in tech circles as 'low-resource' languages. As a result, LLMs often make prejudicial decisions about speakers of minority dialects when prompted to make character, employability or criminality decisions. Furthermore, research shows that AI safety is lower for people who speak these languages.⁷⁵ Facial recognition technologies are also known to be less reliable when used on children's faces and other groups based on gender and ethnicity, which can lead to discrimination and further marginalization of minority communities.⁷⁶

Left to market forces alone, AI is set to widen the digital divide by benefiting primarily the Global North. The use of AI in existing business operations and to deliver better products and services to both businesses and consumers will have a cumulative global economic impact of \$19.9 trillion through 2030. This equates to a 3.5 per cent rise in global gross domestic product (GDP).⁷⁷ Nonetheless, Africa's share of those gains is expected to be modest: Predictions show the continent may add only \$400 million to its GDP due to underdeveloped digital infrastructure.⁷⁸ With greater investment by governments, and more child-sensitive design by companies, frontier technologies can be game changers, especially if they are focused on the hardest-to-reach children. These principles must be built in from the start and based on rigorous evidence that includes the perspectives of children themselves.

With greater investment by governments, and more child-sensitive design by companies, frontier technologies can be game changers.

Young voices

"We must ensure that AI development is guided by ethical principles. It is crucial to mitigate risks, protect privacy and prevent biases that could deepen existing societal divides."

U-Reporter, 23, male, Rwanda

Green technologies

Nearly every child on Earth is exposed to at least one type of climate or environmental hazard, from extreme weather events to toxic chemicals, air pollution and disease.⁷⁹ New and expanded green energy technologies can help avert the worst effects of the planetary crisis, while also speeding social and economic progress. By reducing climate-related risks, helping improve air and water quality, and bringing clean energy to underserved areas, they can greatly enhance children's lives.

The rapid growth of **renewable energy technologies** is a meaningful step toward sustainability.⁸⁰ Next-generation solar photovoltaics (PVs) and wind technologies – including more efficient turbines and offshore wind farms – are quickly expanding their share of global electricity supply. Novel solar innovations are particularly promising for development and humanitarian settings, post-conflict and post-disaster recovery.⁸¹ Costs of these technologies in some regions are now lower than fossil fuels, and solar energy is poised to become a leading source of electricity generation globally in the coming decades.

New ways of providing renewable energy, including local energy networks and standalone systems, are also gaining ground. These **decentralized energy systems**, which are either off grid or microgrids, reduce emissions and enhance access and reliability where large-scale infrastructure is lacking.⁸² They offer a viable option to address persistent energy challenges in underserved areas, including Sub-Saharan Africa and South Asia.⁸³

Energy storage technology is also vital in the transition to clean, dependable energy. Innovations like thermal energy storage can transform intermittent clean energy from wind and solar into a reliable source of on-demand energy.⁸⁴ Its reach is growing fast: Amid record low prices, the global energy storage market nearly tripled in 2023.⁸⁵ Providing this reliable power to off-grid and underserved communities can transform children's lives.⁸⁶

A variety of other green technologies – such as smart grids, sustainable transportation, green building solutions,⁸⁷ advanced water management systems, climate modelling tools, early warning systems (for climate hazards and environmental threats),⁸⁸ sustainable agriculture practices and eco-friendly materials – also have the potential to significantly enhance children's lives by 2050.

Governments, multilateral institutions and international financial institutions need to prioritize investment in green energy technologies that are clean, affordable and reliable. They must also ensure that countries that bear the least responsibility for the climate crisis – and that are the least equipped to manage its effects – are equipped for a sustainable energy transition. To participate in and benefit from the transition, all countries need access to innovations, infrastructure, technology transfers and green skills development.

Vaccine breakthroughs

Vaccines are one of the most transformative innovations in medical history. Since 1974, vaccination has averted 154 million deaths, including 146 million among children under 5, of whom 101 million were infants.⁸⁹ Breakthrough technologies in the sector now promise to save many more children's lives.

While the rollout of COVID-19 vaccines was marred starkly by inequities, the pandemic still reinvigorated the vaccine sector.⁹⁰ The development and distribution of COVID-19 vaccines in record time renewed global attention on their lifesaving role. Some of the vaccines that immunized hundreds of millions of people used messenger RNA (mRNA) technology, a scientific advancement that gave scientists a template to quickly code a new generation of mRNA vaccines – which can also be harnessed to fight some of the world's most infectious, deadly diseases. In addition, the crisis spurred advancements in deployment, increased manufacturing capacity and prompted investments from both governments and companies. The COVID-19 pandemic sparked a 30 per cent increase in vaccine candidates over the past five years.⁹¹

The post-COVID vaccine landscape looks promising for children on multiple levels:

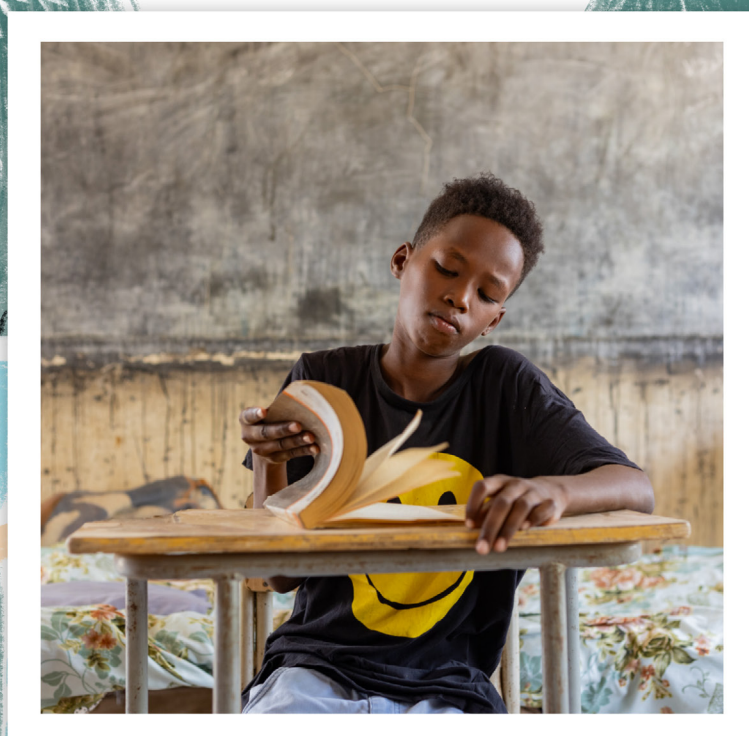
- **mRNA technology** is currently being adapted for use in vaccines for various diseases, including influenza, cancer, Zika and respiratory conditions.⁹²
- The world's **first effective malaria vaccines** are now available to and recommended for young children, changing the game when it comes to preventing one of the most challenging and deadly diseases.⁹³ A new mRNA malaria vaccine has also showed promise in preclinical trials.⁹⁴
- COVID-19 triggered an expansion of **immunization investment, partnerships and governance structures**, offering new opportunities for improving the immunization landscape.⁹⁵

It is important to note that child immunization rates have stalled after sliding backwards for the first time in decades.⁹⁶ Conflict, displacement, COVID-19-related disruptions and vaccine misinformation have led to certain setbacks, particularly in low- and middle-income countries.⁹⁷ Closing the immunization gap demands a coordinated global response.

Similarly, stakeholders can build on momentum in vaccine development by adopting a collaborative approach. By de-risking and increasing investments in manufacturing and R&D, coordinating insights to boost vaccination rates and commercial demand, and fostering a regulatory environment that encourages equitable access to vaccines, the global community can unlock vaccines that save millions more children's lives.⁹⁸

Chapter 2

Children in the world of 2050



The three megatrends explored in the previous chapter will continue to have acute impacts on children's lives in the years to come, but many other forces will also play a part.

To develop a sense of how these megatrends – along with other significant forces and trends – might influence the future of childhood, UNICEF and the Wittgenstein Centre explored scenarios of what the future might look like depending on rates of progress and on the actions of decision-makers. For example, what will the future look like if decision-makers choose a more fragmented path, leading to greater inequality and environmental degradation? What if they opt for a more inclusive and sustainable path?

This chapter looks at these scenarios for the future. It looks at the impacts of decision-makers' choices in seven areas: child survival and life expectancy; socioeconomic development; education; gender equality; conflict; urbanization; and environment.

The data projections are shown under three alternative scenarios, which depend on potential global trajectories:

- a future shaped by business-as-usual trendlines;
- a future shaped by accelerated development; and
- a future shaped by delayed development.

The scenarios trace decadal averages from the 2000s to the 2050s. The business-as-usual scenario assumes that historic patterns of change will continue from the 2000s to the 2050s;¹ accelerated development assumes a faster rate of progress towards a more equitable world, thanks to robust social investments and a focus on sustainability; and delayed development assumes a slower rate of progress.

What will the future look like if decision-makers choose a more fragmented path, leading to greater inequality and environmental degradation?

The Shared Socioeconomic Pathways model

The Shared Socioeconomic Pathways (SSPs) are a set of scenarios used to explore potential future global socioeconomic trends, particularly in the context of climate change. Each scenario includes assumptions about economic development, population growth, technological advancements and greenhouse gas emissions. These factors are central to how the SSPs project different global futures and their interactions with climate change. Unlike prediction methods, scenarios explore a range of possible futures by considering various plausible developments, rather than attempting to forecast a specific outcome.

Here's how each of these components is integrated into the SSP framework:

- 1. Economic development:** Each SSP scenario assumes different trajectories of global and regional economic growth, usually measured in terms of GDP per capita. These assumptions affect the capacity to invest in mitigation and adaptation strategies, and they shape future consumption patterns and emissions.
- 2. Population growth:** Assumptions about population growth are critical to the SSPs, because they influence resource demand, energy consumption and carbon emissions. Different pathways assume different rates of population change based on fertility rates, life expectancy and migration patterns.
- 3. Technological advances:** Each SSP makes specific assumptions about the pace and direction of technological innovation, particularly in sectors like energy, agriculture and industry. These assumptions are crucial for understanding future emissions trajectories and the feasibility of decarbonization.
- 4. Environment:** The SSPs build on narratives regarding environmental policy and use of natural resources, including the use of fossil fuels, land use, deforestation and agricultural practices.

The three scenarios show the future is not yet defined.

Remaining on the **business-as-usual** pathway, it is projected that child populations in low-income and lower-middle income countries will surge by the 2050s while they decline elsewhere; about eight times more children could be exposed to extreme heatwaves compared with the 2000s; and the world could fail to achieve universal completion of secondary school for all children. In addition, more children in many parts of Africa could be exposed to prolonged subnational conflict than they were in the 2000s.

In a scenario of **accelerated development**, more than four times more children are expected to be exposed to extreme heatwaves in the 2050s compared with the 2000s. However, life expectancy for newborns is projected to rise from 68 to 84 years. Economic growth in low-income countries, if combined with social protection policies, could mean fewer children living in poverty; the world could see all children having the opportunity to complete primary and upper secondary school; more children could live in societies with gender equality; and the number of children exposed to prolonged subnational conflict could drop by 59 per cent.

In a fragmented world of **delayed development**, more children are projected to be living in low-income countries in the 2050s, with millions still not learning in or out of school; nearly 14 times more children are expected to be exposed to extreme heatwaves; and in some regions, children could still face extreme gender inequality, with 1.1 billion living in gender unequal societies. And up to 1.4 billion children globally face the potential risk of exposure to prolonged subnational conflict.

These three scenarios show the future is not yet defined. How governments and the global community choose to invest their resources will determine which path children find themselves on in the 2050s.

Young voices

"We need to create spaces for children and young people to imagine the world they want. Every child deserves a say in shaping the future."

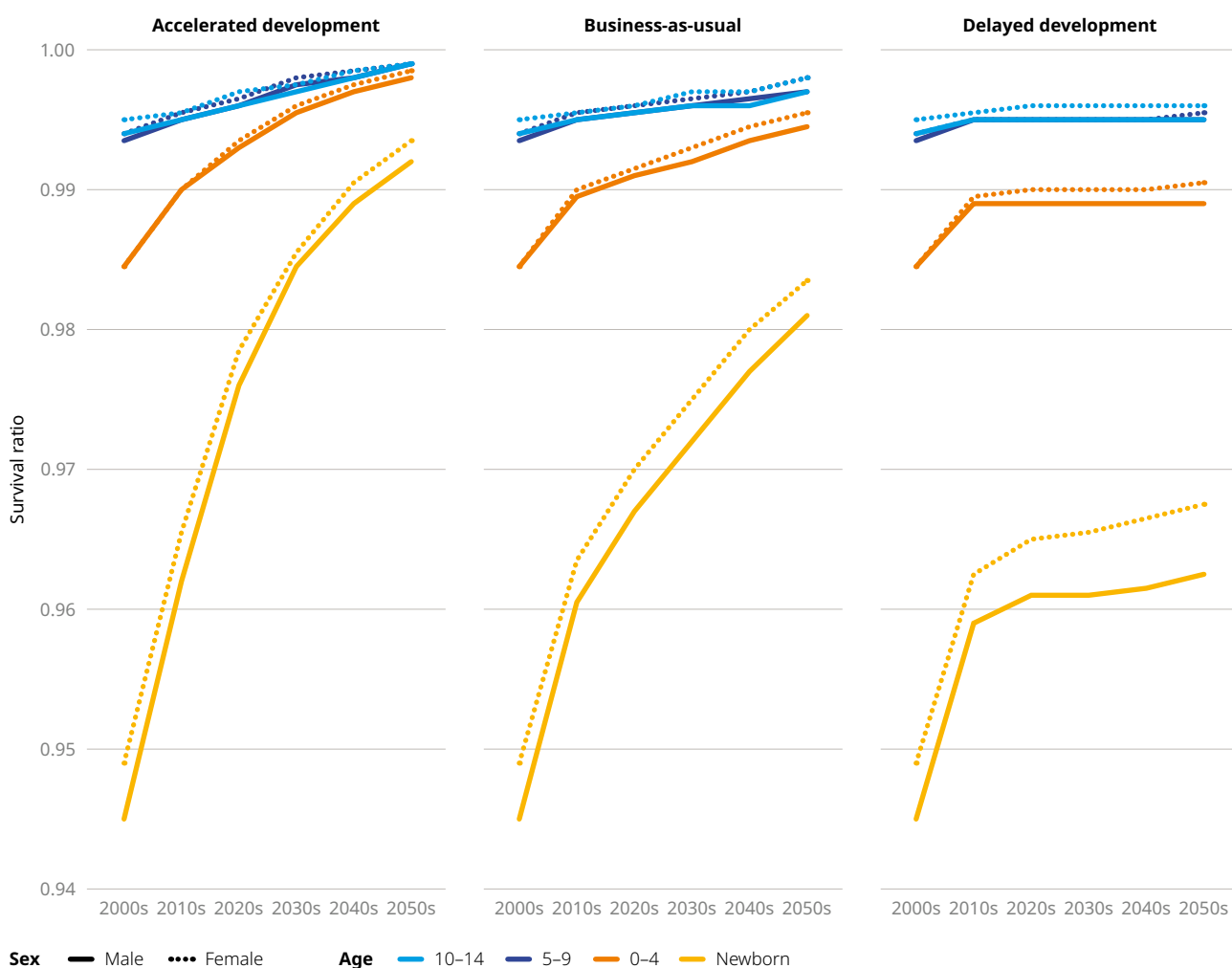
Fisayo Oyewale, 27, Senior Youth Foresight Fellow, Nigeria

Child survival and life expectancy

In the 2050s:

- The rate of survival for newborns – babies up to 28 days old – is projected to increase from more than 94 per cent of children born in the 2000s to more than 96 per cent in the 2050s across all three scenarios for the future.
- The probability that a child will survive to age 5 is also projected to increase from 98.5 per cent in the 2000s to 99.5 per cent in the 2050s in the business-as-usual scenario.

Figure 2.1 Three scenarios for change in survival ratios, from the 2000s to the 2050s



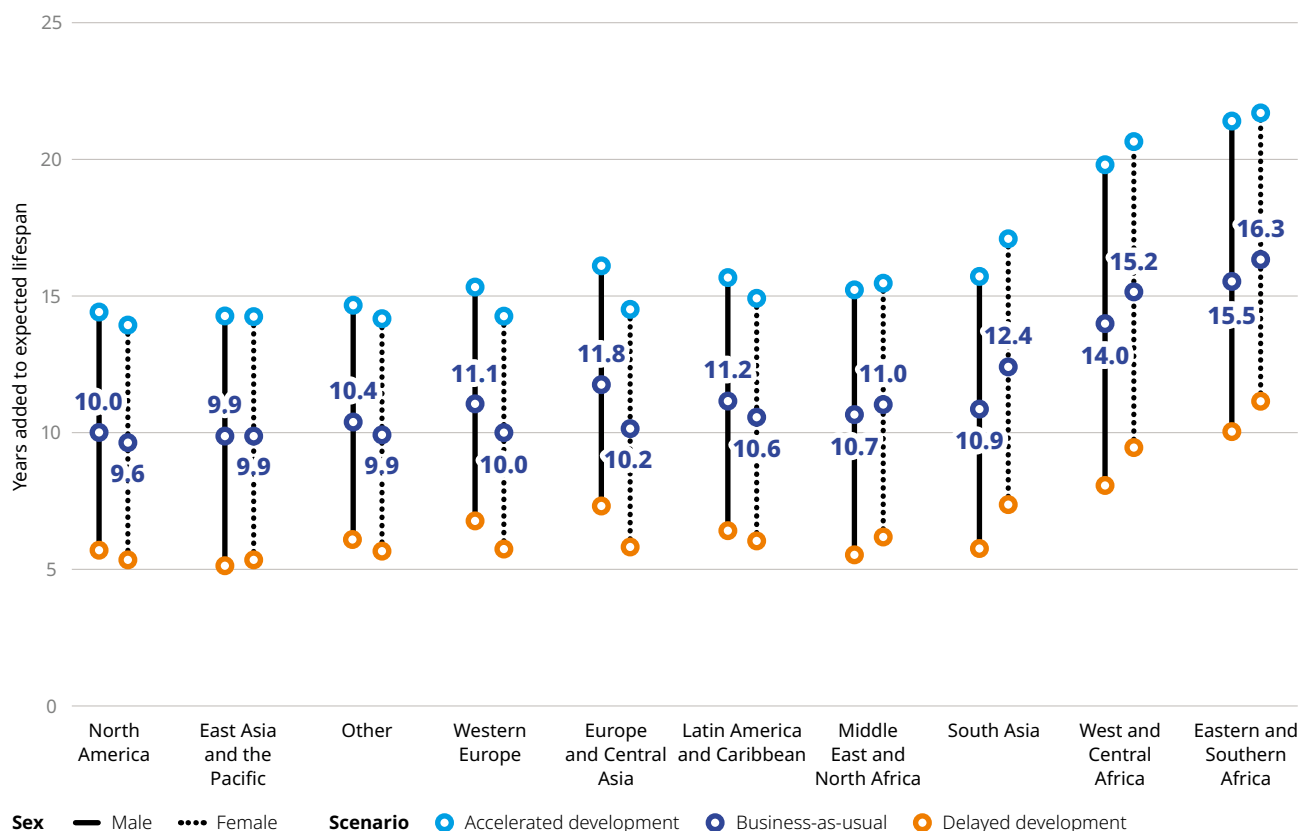
In the 2050s, in the business-as-usual scenario:

- Women are still expected to live longer than men by five years.
- Women's life expectancy at birth is expected to rise from 70 (in the 2000s) to a projected 81 years of age.
- Men's life expectancy at birth is expected to climb from 66 (in the 2000s) to 76 years of age.



Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.2 Three scenarios for projected growth in life expectancy at birth for men and women, from the 2000s to the 2050s, by region



Impact on children

A continuation of the historic drops in newborn and child mortality is reason to be optimistic about the future. However, when it comes to child survival, even one death is too many.

Ending preventable child deaths will require investment in high-quality and accessible health care. Achieving this goal means training skilled birth attendants and health care services for women and children, especially in the early years of life.

Ensuring child survival and development requires investment in prenatal care, health, nutrition, early childhood care and education. It means supporting families so they can provide their children with the best start in life.

As life expectancy increases, as described in Chapter 1, children are projected to live in ageing societies, where older generations could potentially play a greater role in family and community life. However, managing longer lifespans could also shift societal resources towards care for the elderly, potentially affecting investments in education and child well-being overall.



Note: See technical annex for list of countries in each region.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

A continuation of the historic drops in newborn and child mortality is reason to be optimistic about the future.

Young voices

“By 2050, we need empathy, communication and policies that promote new activities and sustainable jobs. Leaders, build an inclusive and prosperous future.”

U-Reporter, 16, female, Ecuador

Socioeconomic conditions

In the 2050s:

- While children will make up a shrinking proportion of the population across all income groups, the number of children living in the 28 countries currently classified as low-income countries is projected to more than double from the 2000s (a 126 per cent increase).
- 23 per cent of the world's children are projected to live in today's low-income countries – more than double the share living in these countries in the 2000s (11 per cent).
- The number of children in today's upper-middle income countries is projected to decrease.



Note: These calculations are based on World Bank country income classifications in 2024; shading shows the range from low to high variants.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.3 Number of children and share of children in the population, from the 2000s to the 2050s, by current World Bank income group

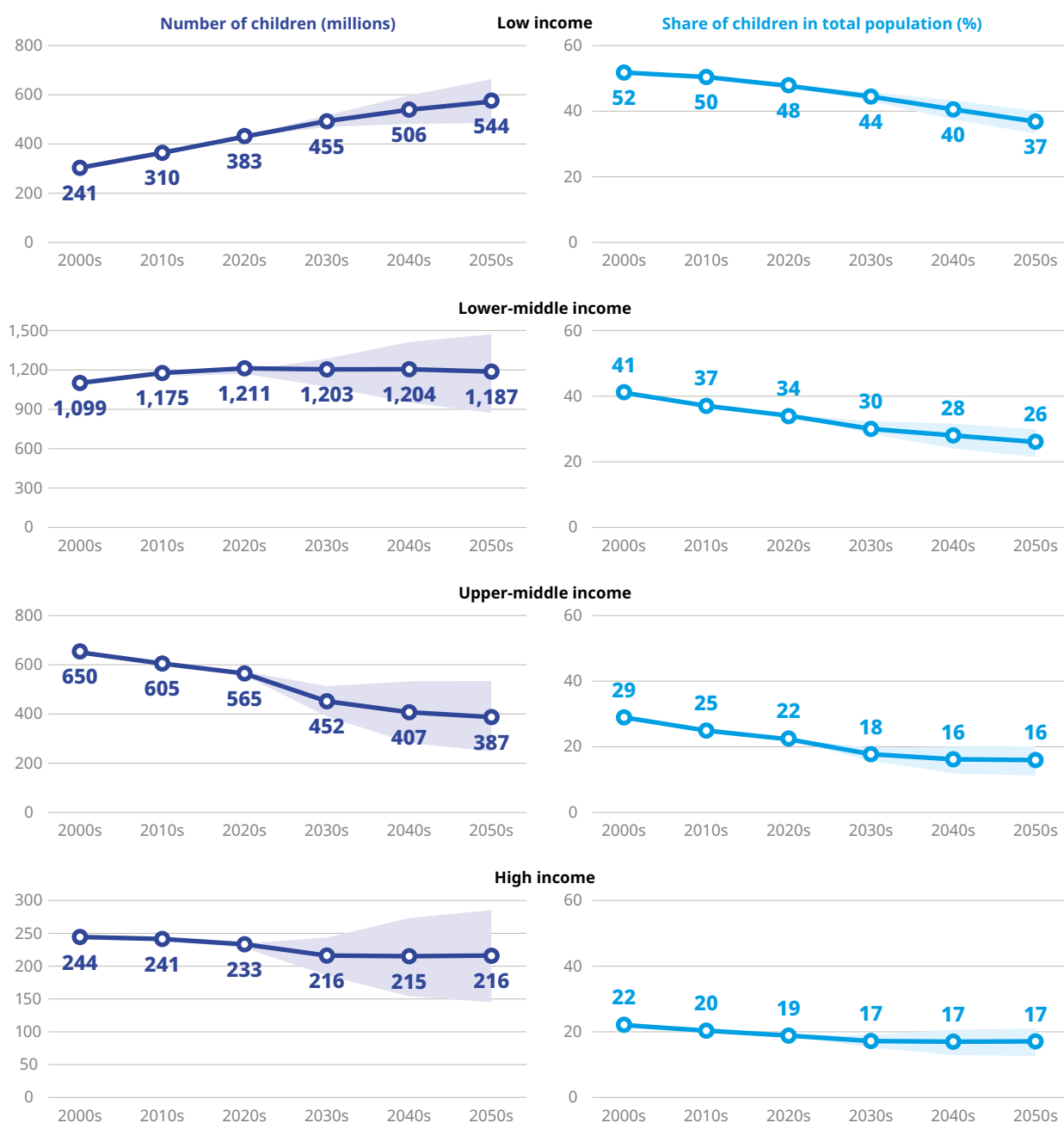
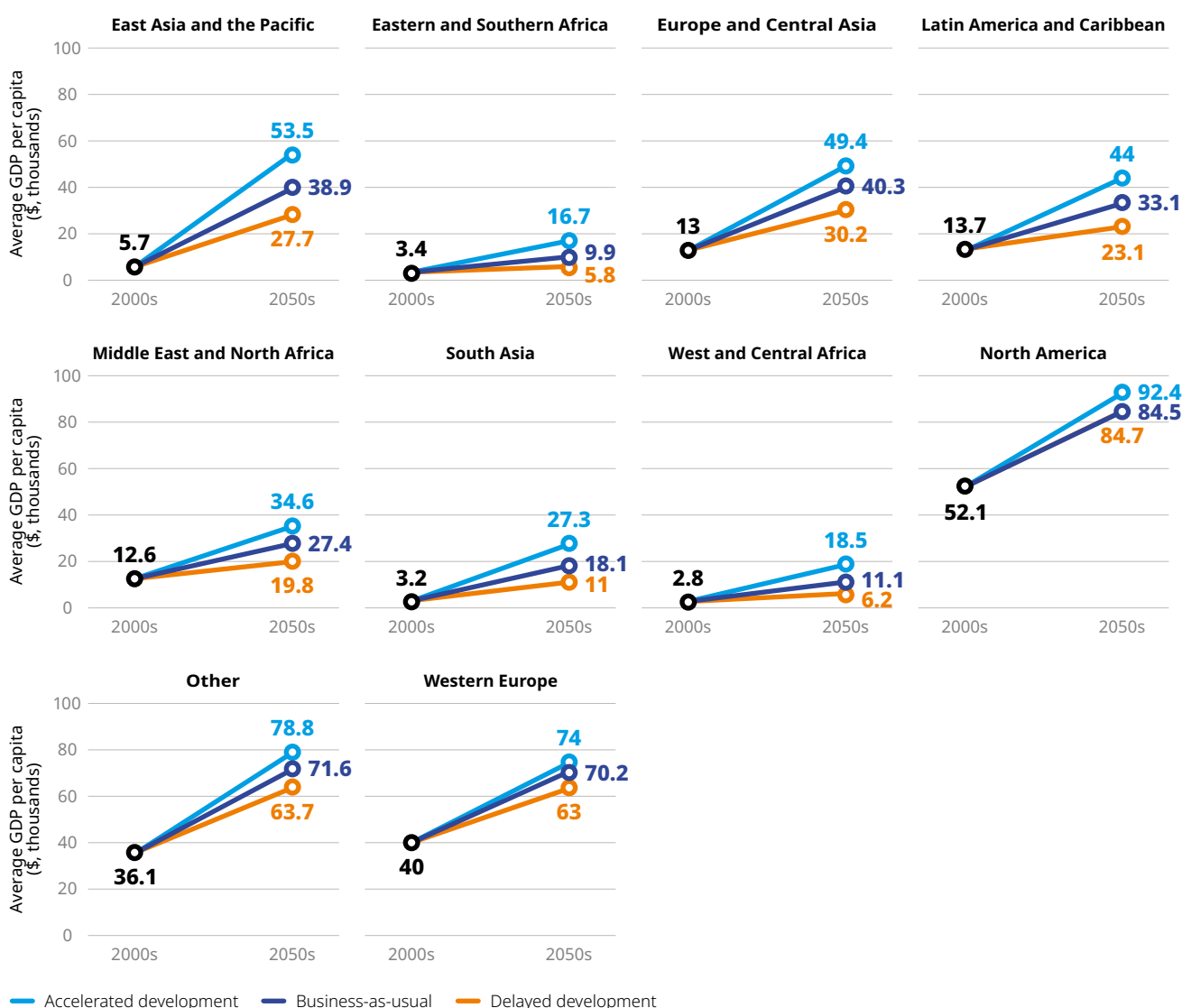


Figure 2.4 Three scenarios for average GDP per capita in the 2000s and 2050s, by region

In the 2050s:

- GDP per capita is projected to double in East Asia and the Pacific, growing from \$17,000 in the 2020s to \$38,900 in the 2050s; in South Asia, it is projected to grow from \$7,000 in the 2020s to \$18,000 in the 2050s.

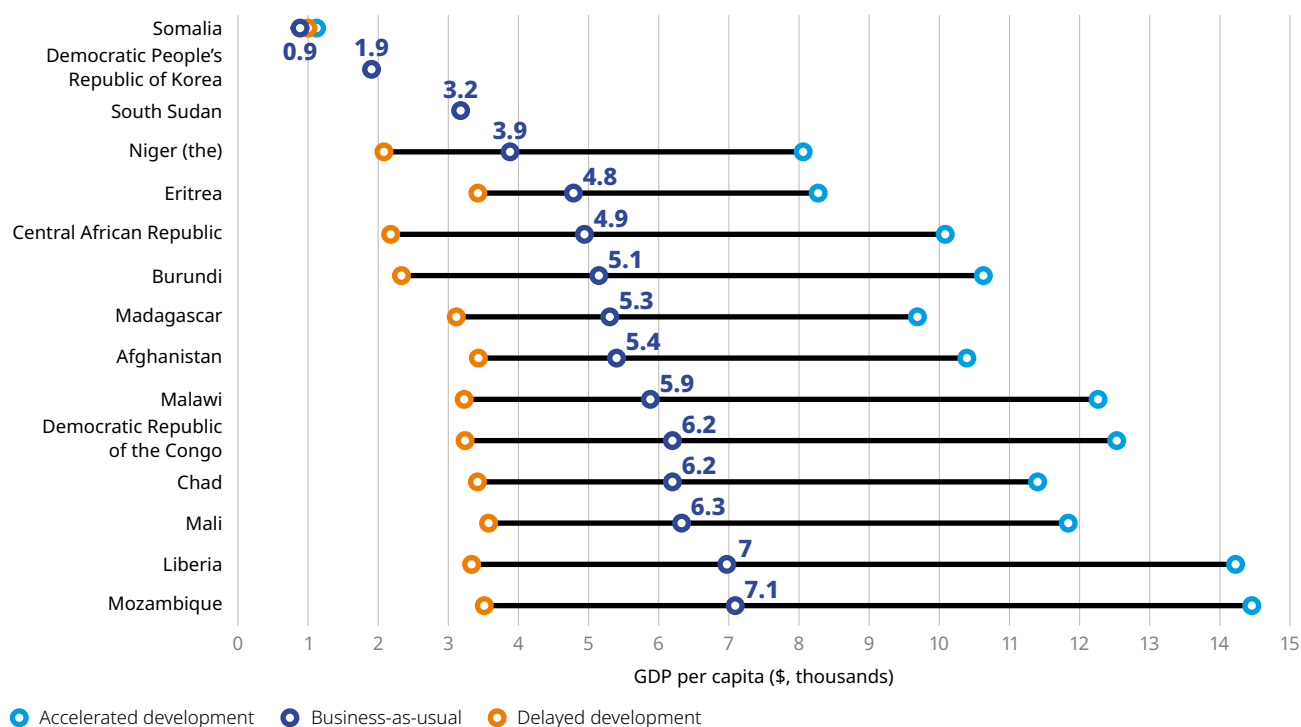
In the 2050s:

- The speed of and opportunity for economic growth are projected to change, depending on the future scenario. In the Democratic Republic of the Congo, for example, the country's estimated GDP per capita in the 2050s is \$6,180 a year in the **business-as-usual** scenario. However, in the future of **accelerated development**, the projected GDP per capita could be more than double that, at \$12,500. By contrast, in the future of **delayed development**, the GDP per capita is projected to reach only roughly half the business-as-usual figure at \$3,200 a year.



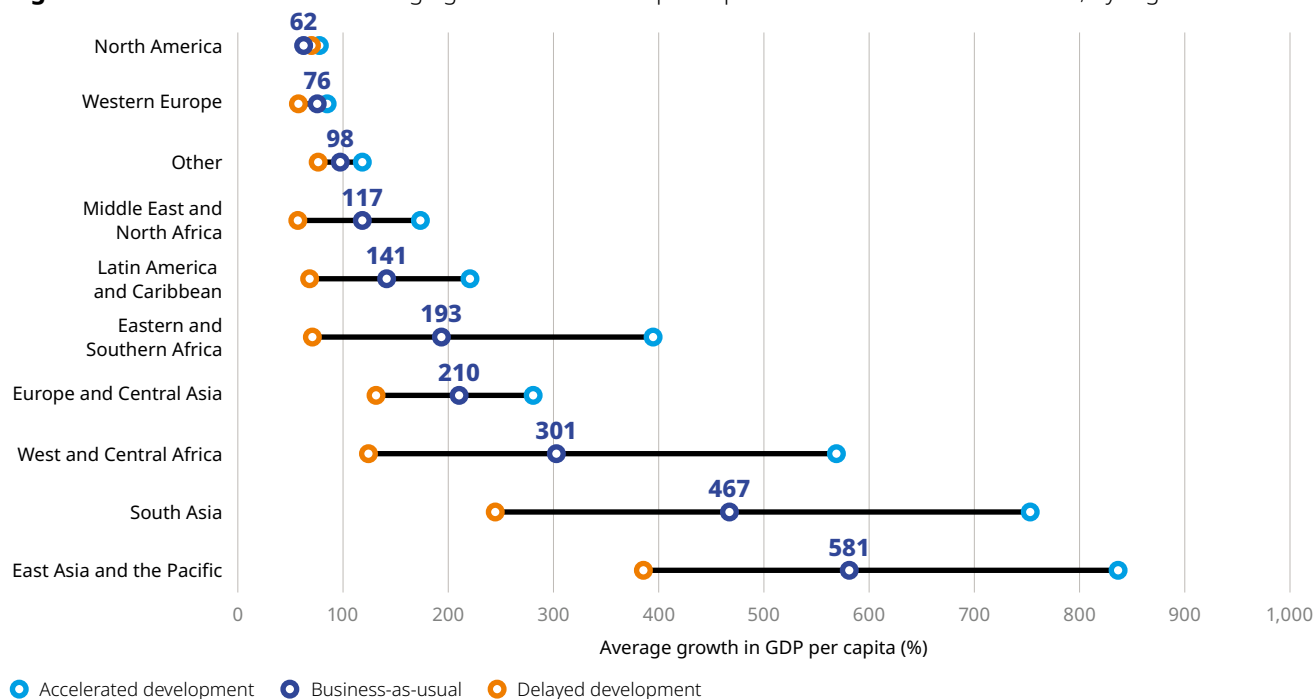
Note: See technical annex for list of countries in each region; the figures are expressed in constant 2017 international dollars at purchasing power parity; figures for countries in each region are weighted by child population.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.5 Three scenarios for GDP per capita for countries with the lowest projected per capita incomes in the 2050s

Note: Calculations are only presented for countries with more than 1 million children; the figures are expressed in constant 2017 international dollars at purchasing power parity.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.6 Three scenarios for average growth of real GDP per capita from the 2000s to the 2050s, by region

Note: See technical annex for list of countries in each region; the figures are expressed in constant 2017 international dollars at purchasing power parity; the countries are weighted by child populations.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Impact on children

Poverty is not just measured in money; it is multidimensional.² The United Nations General Assembly has recognized that children living in poverty are deprived of many rights, including nutrition, water, sanitation, health care, shelter, education and protection.³

Economic growth has been shown to alleviate multidimensional poverty⁴ – but it must be accompanied by strategic policies to ensure no child is left behind.

These estimates describe the overall socioeconomic conditions in which children are projected to live. They are not estimates of child poverty in the 2050s.⁵

From this perspective, the data highlight that only incremental change is expected in many of the world's poorest areas: They show that relatively more children are projected to be born in low-resource environments.

Poverty is also experienced in countries with high average incomes. For example, in 2021, more than 69 million children lived in relative monetary poverty in 40 of the world's richest countries.⁶

Many of the countries at the low end of GDP per capita are at a critical crossroads. If they transition into higher income brackets, they could be poised to reap the benefits of the demographic dividend. But they could also miss this opportunity.

History has provided examples of countries that have seized the opportunity to capitalize on demographic transition. In the latter part of the twentieth century, various countries, including the Republic of Korea and Singapore, saw rapid economic growth thanks to dramatic change in their demographic structures. These changes were followed by socioeconomic transformation and a boom in prosperity.⁷

These types of demographic trends can have a knock-on effect on child poverty: A country with better economic prospects and governance has more capacity to meaningfully address child poverty by investing in the services on which children depend, including education, health, nutrition and social protection.

Of course, the future of children does not only depend on economic growth, but also rests on the collective commitment of decision-makers to invest in children – in peaceful environments with essential services that help children grow and thrive. In the next quarter of a century, it will be essential for governments, especially in low- and lower-middle-income countries, to understand demographic shifts and respond with policies and plans that put them in a good position to fulfil their obligations when it comes to protecting the rights of children and maintaining a standard of living that allows them to make the most of their future.

Economic growth has been shown to alleviate multidimensional poverty – but it must be accompanied by strategic policies to ensure no child is left behind.

Young voices

“There’s a real movement for change. We are seeing examples where young people aren’t just consulted after a decision has been made but are guiding that decision-making process.”

Kate Seary, 27, Youth Foresight Fellow, Wales

Education

In the 2050s:

- In the **business-as-usual future**, the percentage of children with less than primary education is projected to drop to 4.3, compared with 20 per cent in the 2000s. These figures represent progress, but still fall short of the goal of universal completion of secondary school as set out in the United Nations Sustainable Development Goals (SDGs).
- In the future of **accelerated development**, all children could complete primary and upper secondary school in the 2050s.
- In the **delayed development** future, only 81 per cent of children are projected to complete primary education and only 46 per cent of children are projected to complete upper secondary school.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.7 Three scenarios for global population aged 20–24 with at least upper secondary education in the 2000s and the 2050s

	2000s		2050s
	Business-as-usual development	Accelerated development	Business-as-usual development
			Delayed development
Number	215 million	432 million	448 million
Percentage	40%	100%	77%
			46%

In the 2050s:

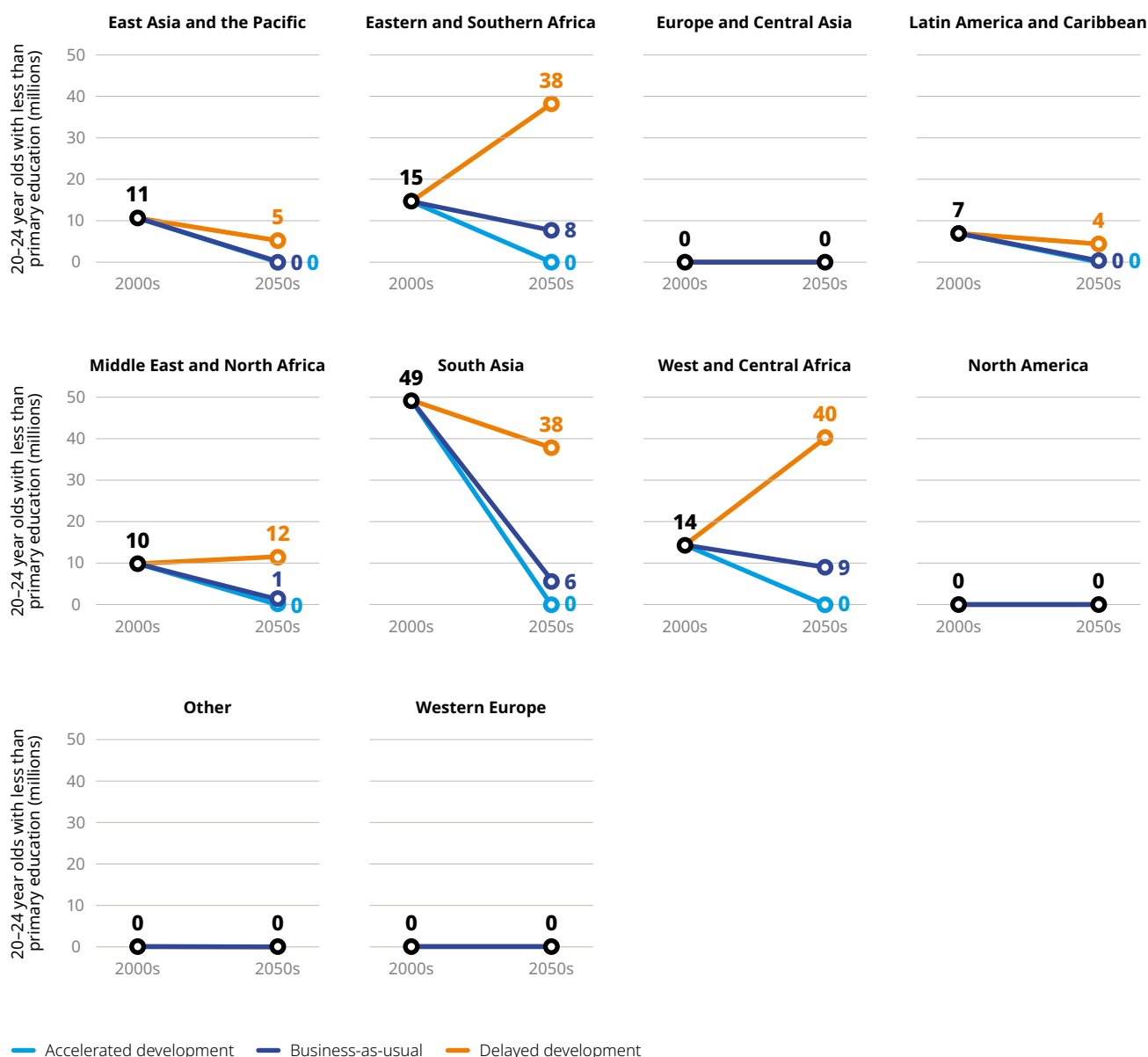
- Every region is projected to see an increase in the percentage of children who complete primary education.
- Eastern and Southern Africa, West and Central Africa, and South Asia are projected to see substantial increases in the number of children who finish primary school.

Young voices

“I had to leave my small island for education. I want to figure out how we can provide quality education for all, so that child who is born in 2050 doesn’t have to leave their islands to study.”

Fathmath Zahanath Zuhury, 23, Youth Foresight Fellow, Republic of Maldives

Figure 2.8 Three scenarios for population aged 20–24 with less than primary education from the 2000s to the 2050s, by region



In the 2050s:

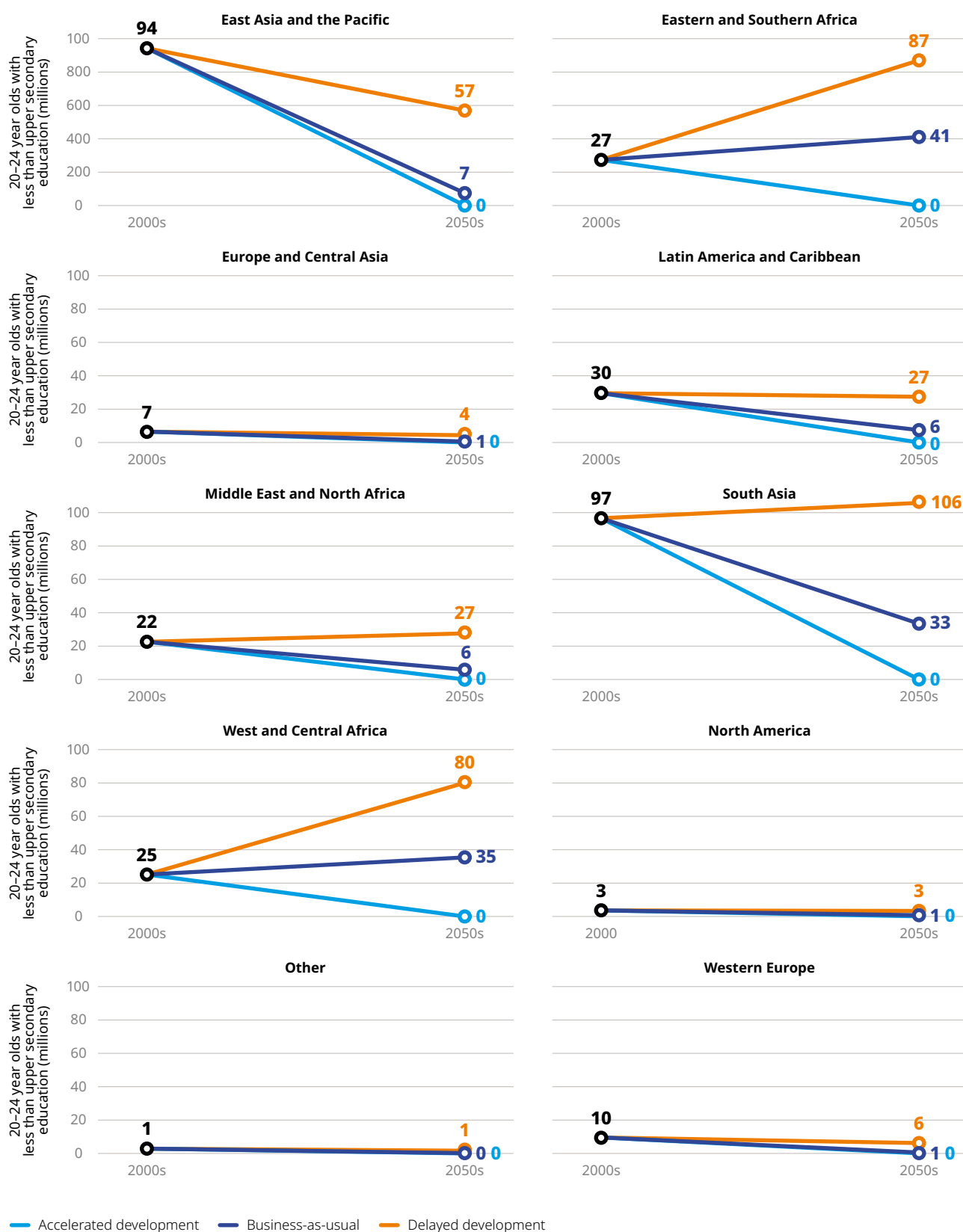
- Globally, the gap between girls and boys in educational attainment is projected to narrow slightly under the **business-as-usual** scenario. However, in the accelerated development scenario, the gap could be completely closed in every region.
- In the **business-as-usual** scenario, more girls complete upper secondary education than boys in East Asia and the Pacific, the Middle East and North Africa, Europe and Central Asia, and South Asia – a flip of the historic pattern. This flip is particularly dramatic in South Asia, where a gap of 12 percentage points in favour of boys in the 2000s turns into a gap of about 2 percentage points in favour of girls.
- In West and Central Africa, the gap of about 11 percentage points in favour of boys is projected to remain mostly constant until the 2050s, except under accelerated development, where the gap could disappear.



Note: See technical annex for list of countries in each region.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

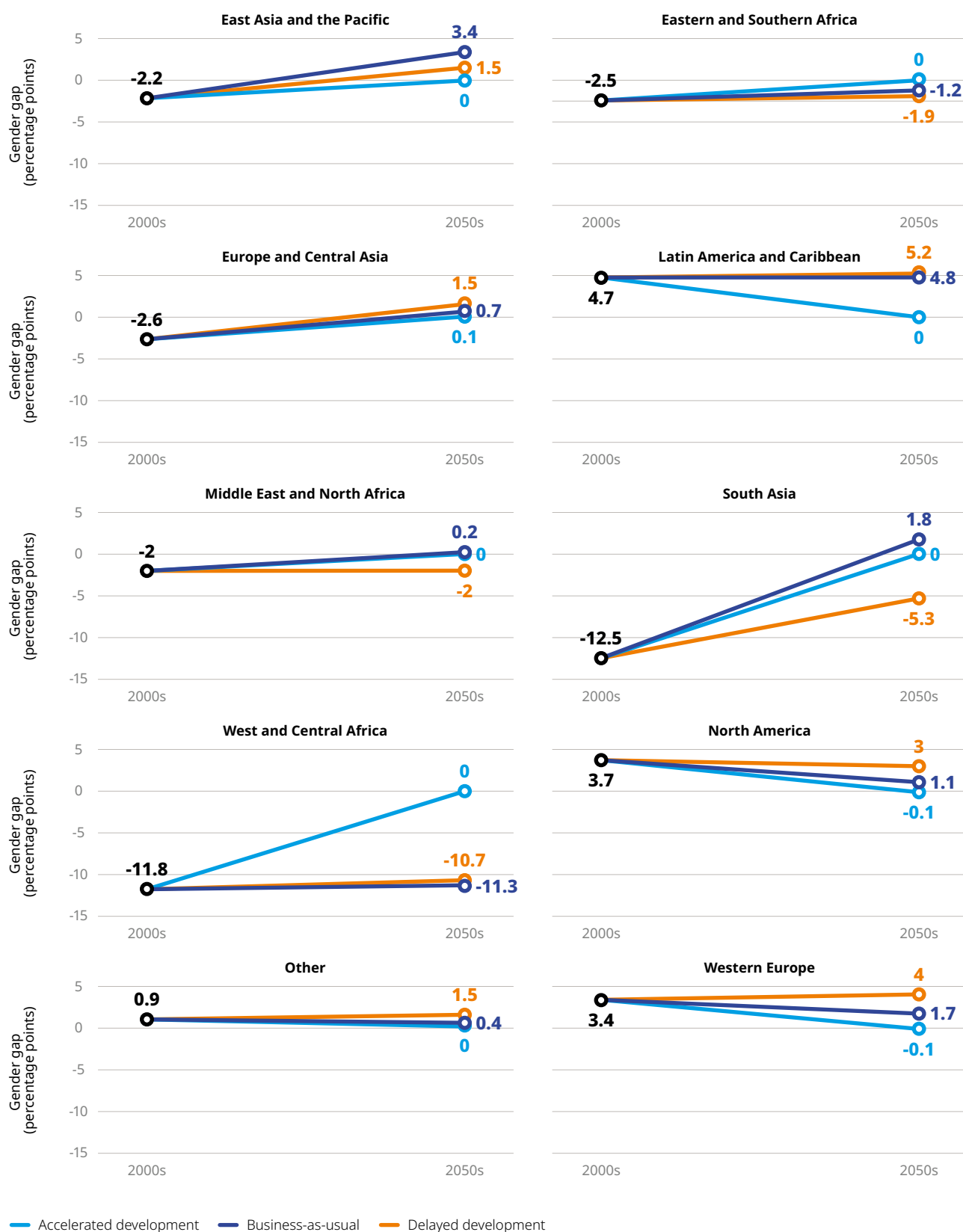
Figure 2.9 Three scenarios for population aged 20–24 with less than upper secondary education from the 2000s to the 2050s, by region



Note: See technical annex for list of countries in each region

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.10 Three scenarios for the difference in the percentage of men and women aged 20-24 who completed at least secondary education in the 2000s and the 2050s, by region



Note: See technical annex for list of countries in each region; Negative numbers favour men, positive numbers favour women, zero implies gender equality.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Impact on children

One of the great achievements of the last century has been the increase in the number of children with access to education. This progress is expected to continue into the 2050s.

Education is key to the future of children, families, communities, states and the world. Education leads to better health, alleviates poverty, drives economic growth, reduces inequality, and empowers children and young people⁸ – and it is therefore pivotal to whether a country can make the most of a demographic transition.⁹

But getting more children into classrooms will not do much if they do not learn. And realizing the social benefits of education cannot occur if children do not acquire the knowledge and skills necessary to participate in the workforce and contribute to family, community and states' economies.

Around the world, about 600 million children have not attained minimum proficiency levels in reading and mathematics, even though two thirds of them are in school.¹⁰

Multiple actions are essential to address the worldwide learning crisis and to ensure children have access to high-quality learning experiences. Among them is the need to focus on equity in and out of learning environments, create friendly environments and provide lessons in languages that children understand.

In other words, learning is as important as access to education. The reverse is also true. Stalled expansion in access to education – especially for girls – has been linked to slower-than-expected demographic transitions, as revealed by a study of 18 countries in Africa.¹¹

Indeed, despite progress towards gender parity in primary school enrolment, a stark divergence emerges in adolescence: Nearly 1 in 4 girls aged 15–19 globally are not in school, employment or training compared with 1 in 10 boys.¹² These disparities cost countries trillions of dollars in lost lifetime productivity and earnings.¹³ Conversely, less than \$2 per day invested in girls' secondary education can yield a return of up to 10 per cent in a country's economic growth.¹⁴

For countries that expect to benefit from a demographic dividend, educational infrastructure, staffing and quality must keep pace with population growth just to maintain the status quo, let alone push learning to new heights. Teachers are a vital part of the solution to the learning crisis. Today, there is a gap of an estimated 44 million teachers globally. Recruiting and training teachers is crucial if we want to be on track to meet SDG 4.¹⁵

We examined how demographic shifts in the next quarter of a century would impact demand for teachers. In regions such as Eastern and Southern Africa and West and Central Africa, where child populations are growing, the demand for teachers is projected to be even more urgent than it is today.

In the 2000s, countries in both regions had average ratios of 44 students per teacher in primary school. In secondary schools in Eastern and Southern Africa, the student–teacher ratio was 25 to 1, while in West and Central Africa it was 27 to 1.

Just to maintain these levels in the 2050s, Eastern and Southern Africa would need to add 1.5 million teachers, and West and Central Africa would require a total of 2 million more teachers for both primary and secondary education.

Today, there is a gap of an estimated 44 million teachers globally.

To raise student–teacher ratios to the levels seen in the 2000s in high-income countries (15 students per teacher in primary school and 12 to 1 in secondary school), Eastern and Southern Africa and West and Central Africa would need to add more than 7 million teachers each – if enrolment rates stay the same. If the rates rise to meet enrolment rates in high-income countries, Eastern and Southern Africa and West and Central Africa would need to add a total of 31 million more teachers.

Young voices

“If we can focus on vocational education, we can help young people gain the practical skills they need to thrive in the future economy.”

May Phyu Phyu Aung, 24, Youth Foresight Fellow, Myanmar

Gender equality

According to projections for this report, based on the United Nations Development Programme's Gender Inequality Index (GII) and the SSPs, gender inequality is projected to be a less prominent part of children's world in the future than it is today. However, many will still be living in societies with gender inequality in the 2050s, including in Eastern and Southern Africa and West and Central Africa – two of the three regions where most of the world's children will live.

The GII is a composite measurement of reproductive health, empowerment and the labour market.¹⁶ However, various other factors influence gender inequality, including violence and discrimination, lack of legal protections, and harmful societal norms, like child marriage, that can restrict opportunities and perpetuate inequalities.

The SDGs recognize gender equality as essential to unlocking a more prosperous and sustainable future.¹⁷ What's more, as well as shaping economic progress, gender equality and women's empowerment have an impact on demographic trends.¹⁸

In countries where child populations continue to climb, demographic transitions and the opportunities of a demographic dividend are directly tied to the education and empowerment of girls and women.¹⁹

Education, especially for girls, provides a point of entry for addressing many of the inequalities that hold back social and economic progress.²⁰

Conflict

In the 2050s:

- Globally, fewer children are projected to live in areas at high risk of prolonged subnational conflict – meaning conflict that lasts more than five years.²¹
- In the **business-as-usual scenario**, the number of children at risk is projected to drop from more than 833 million in the 2000s to 622 million in the 2050s. However, the picture looks different by region. In Eastern and Southern Africa, the number of children projected to live in countries with a high risk of prolonged subnational conflict increases from 71 million in the 2000s to 97.8 million in the 2050s. The risk also increases in West and Central Africa, from 5.1 million to 69 million.
- In the future of **accelerated development**, the risk of conflict stays at low levels or declines in all regions. Globally, the drop in the child population exposed to prolonged subnational conflict is 60 per cent, with 342 million children at high risk of living in countries prone to prolonged subnational conflict in the 2050s.

Globally, fewer children are projected to live in areas at high risk of prolonged subnational conflict.

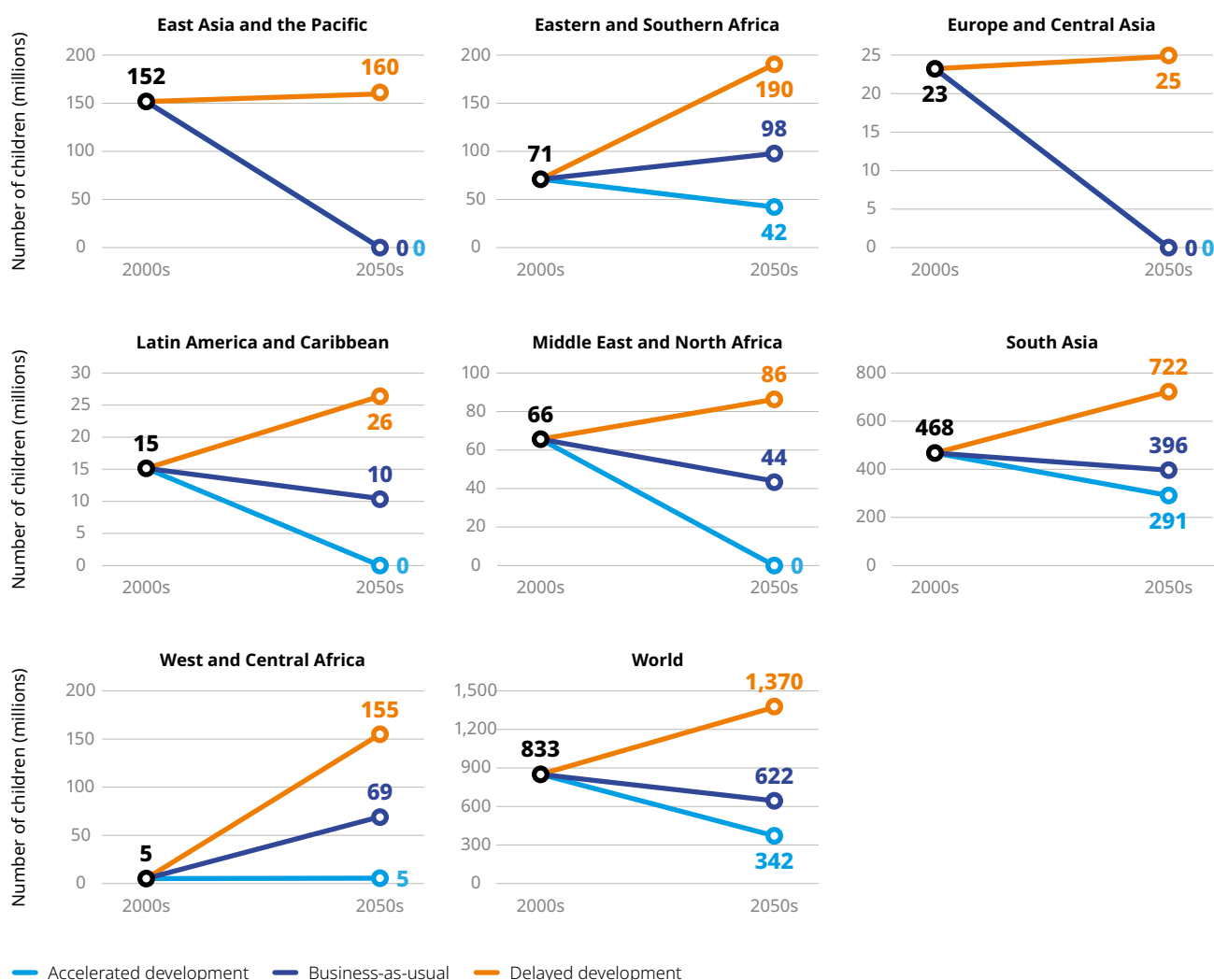
- In the **delayed development future**, the global risk increases and 1.4 billion children worldwide are projected to be at risk of exposure to prolonged subnational conflict – a 64 per cent increase from the 2000s.
- In the **delayed development** scenario, South Asia experiences the biggest increase in the number of children living in countries with the preconditions for prolonged subnational conflict, with a jump from 468 million in the 2000s to 722 million in the 2050s. Significant increases also are projected to occur in Eastern and Southern Africa, where the number of children at risk of experiencing prolonged subnational conflict jumps from 71 million to 190 million children in a region of 465 million children. In West and Central Africa, 150 million more children face risk of exposure.



Note: See technical annex for list of countries in each region.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Figure 2.11 Three scenarios for number of children living in countries at risk of prolonged subnational conflict in the 2000s and the 2050s, by region



Young voices

"Protect the environment, human lives and maintain peace without war."

U-Reporter, 17, female, Ukraine

Impact on children

Armed conflict presents one of the world's greatest risks to the rights, lives and well-being of children around the world.

Recent headlines from the Central African Republic, Gaza, Haiti, the Sudan, Ukraine and Yemen underscore that conflict – subnational and across national boundaries – is a constant in many children's lives. The idea that conflict could become less of a threat may seem naïve in these circumstances. However, the scenarios outlined in this report are not predictions, but rather an exploration of possibilities. In addition, the potential paths presented relate only to subnational conflict, not war between countries. Our calculations use long-term projections for prolonged subnational conflict, combined with recent population projections.²²

Regardless of the type of conflict, children are among the most vulnerable members of the population.

The effect of conflict on children is not just about bullets and bombs. The risk of mortality among women and children from non-violent causes increases substantially in response to nearby conflict.²³ Additionally, children lose access to essential services such as water and sanitation, and education often comes to a halt. Routine health care, such as immunization, is abandoned. These deprivations expose children to potentially deadly disease and compound the risks inflicted by conflict.

Conflict also uproots children from their homes, disrupting their routines and exposing them to the dangers of life on the move, including violence, sexual abuse and exploitation, trafficking, and separation from their families.²⁴

In many places in the world, conflict overlaps with other crises, heightening the risks to children.²⁵

Unfortunately, the global response to address these risks – and to invest in prevention – has been inadequate so far. Funding is well below levels required to meet the needs and protect the rights of children impacted by conflict, and to prevent conflict from emerging in the first place.²⁶

Urbanization

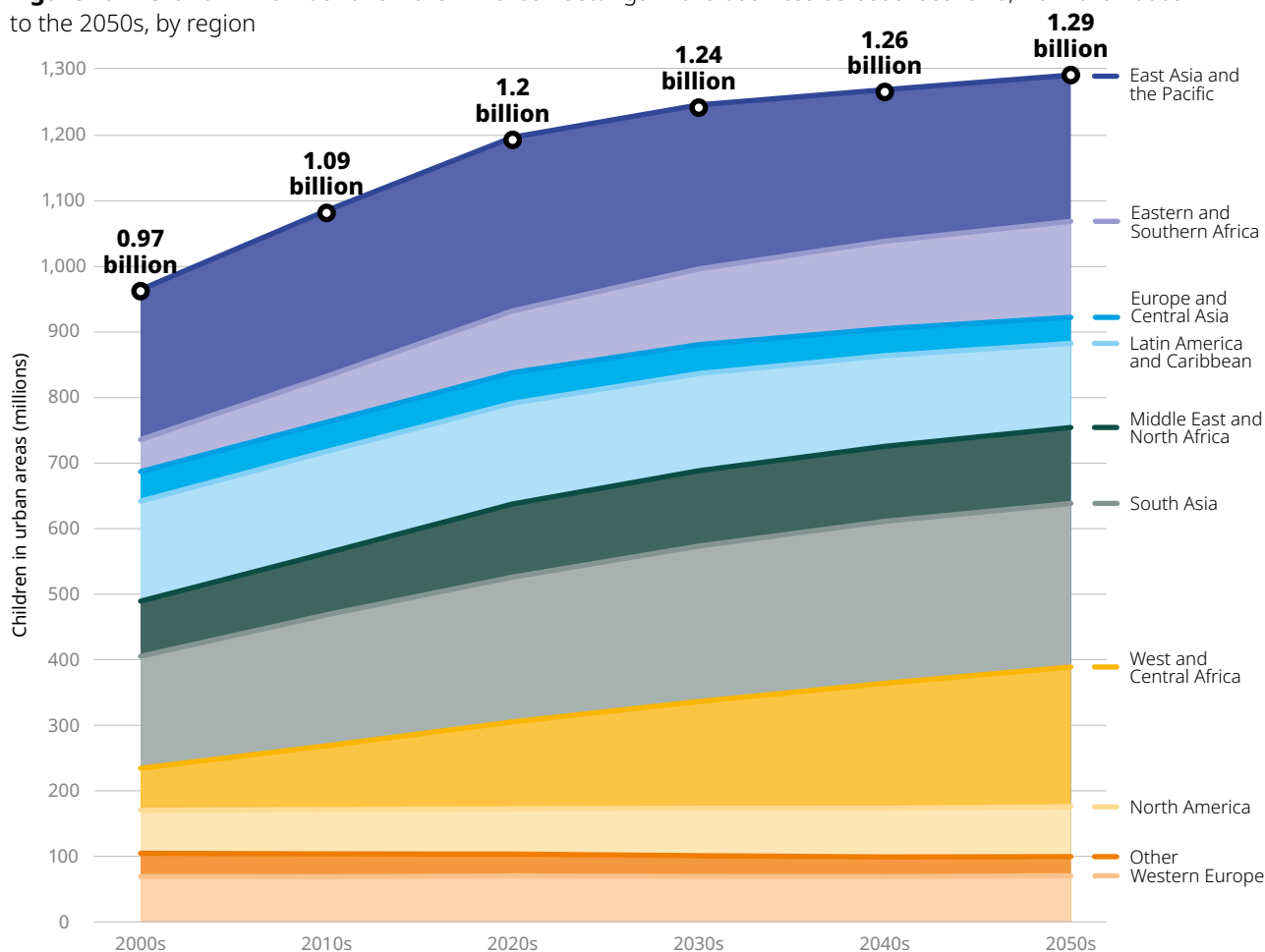
In the 2050s, under the business-as-usual scenario:

- The number of children who live in urban areas is projected to rise by 33 per cent – from 971 million in the 2000s to 1.3 billion in the 2050s.
- Nearly 60 per cent of the world's children are projected to live in urban settings.
- Latin America and Caribbean is projected to continue to have the highest share of children who live in urban settings, at 84 per cent.
- Eastern and Southern Africa is projected to remain the least urbanized, with less than 45 per cent of children living in cities.
- In West and Central Africa, the number of children living in urban areas is projected to more than triple, from 63 million in the 2000s to 209 million in the 2050s.
- While this is a dramatic increase in numbers, the share of children in urban areas globally is projected to increase only 15.4 percentage points from the 2000s to 59.7 per cent in the 2050s.

The effect of conflict on children is not just about bullets and bombs.

The number of children who live in urban areas is projected to rise by 33 per cent.

Figure 2.12 Growth in number of children in urban settings in the business-as-usual scenario, from the 2000s to the 2050s, by region



Impact on children

In theory, the wealth that resides in cities should provide access to better health care, education, goods, services and jobs. However, the benefits of urban life do not extend to all city dwellers.²⁷

While, on the whole, children in urban settings have greater access to services such as health care and education than their rural peers, the aggregate masks great inequalities that have ramifications for children's well-being.²⁸ For example, urban children in the poorest quintile are twice as likely to die before their fifth birthday than children in the richest quintile.²⁹ They are also less likely to have access to health care and social services. More than 28 per cent of all children who never have received vaccinations lived in urban areas.³⁰



Note: See technical annex for list of countries in each region.

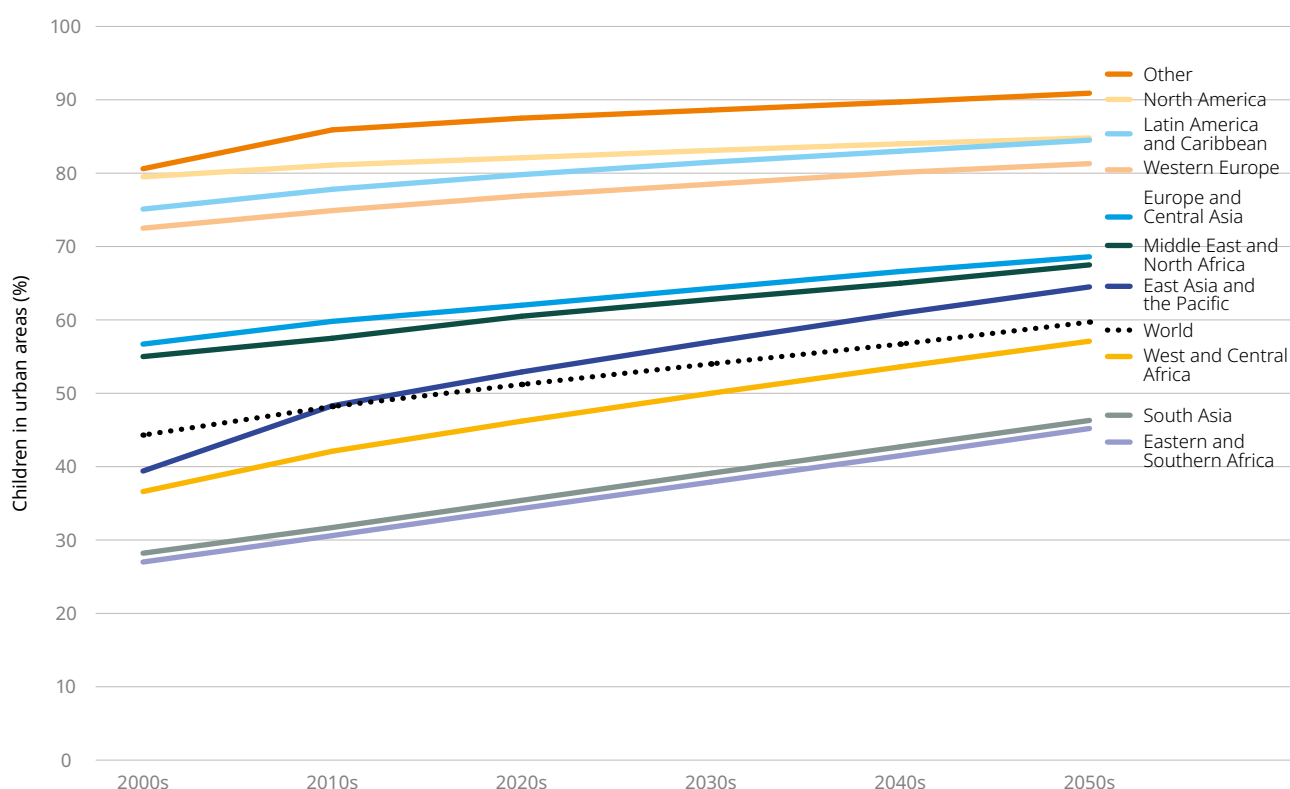
Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Young voices

"We should nurture human connection, advocate for equality and inclusivity, improve sustainability to protect and preserve our natural resources."

U-Reporter, 19, female, Philippines

Figure 2.13 Growth in share of children living in urban settings in the business-as-usual scenario, from the 2000s to the 2050s, by region



An estimated 350 million to 500 million children lived in slum households in 2022 – mostly in Asia and Africa.³¹ Without targeted interventions, it is likely that many more children will reside in high-density urban communities by 2050, where access to water, health care and education is suboptimal. For children in these places, exposure to communicable diseases and environmental hazards, such as flooding and extreme heat, take an outsized toll on their health.³² Many children in cities are also routinely exposed to violence, which compromises their health and overall well-being.³³

Making urban areas healthier and more secure will be key to achieving the development targets set out in the SDGs, especially the goal of making “cities and human settlements inclusive, safe, resilient and sustainable”.³⁴

Addressing the challenges that children face in cities means putting children at the centre of urban planning, laws and standards for infrastructure and green space.³⁵ Critical to this effort is establishing planning and policies that account for climate and environmental hazards through disaster-preparedness plans, as well as resilient infrastructure and systems.

The Child-Friendly Cities Initiative, launched by UNICEF and UN-Habitat in 1996, aims to turn cities into places where children are protected; have access to essential services; can participate in family, cultural and community life; and have places to play, learn and grow.³⁶ This approach to creating sustainable, resilient and responsive cities for children can be activated in more parts of the world to put child rights at the centre of urban planning.



Note: The ‘Other’ category includes Australia, Israel, Japan, New Zealand, the Republic of Korea and Singapore; see technical annex for list of countries in each region.

Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Addressing the challenges that children face in cities means putting children at the centre of urban planning, laws and standards for infrastructure and green space.

Climate and environmental hazards

In the 2050s:

- Across all three future scenarios, greater numbers of children are projected to be exposed to extreme climate and environmental hazards (see Figure 2.14).
- In the business-as-usual scenario, compared with the 2000s, in the 2050s:
 - About 8 times more children are projected to be exposed to extreme heatwaves.
 - 3.1 times more children exposed to extreme river floods.
 - 1.7 times more children exposed to extreme wildfires.
 - 1.3 times more children exposed to extreme droughts.
 - 1.2 times more children exposed to extreme tropical cyclones.

Significant regional variation is expected across scenarios for climate and environmental hazards by the 2050s. The greatest increases in exposure to extreme **heatwaves** from the 2000s to the 2050s are expected in East Asia and the Pacific, the Middle East and North Africa, South Asia, and West and Central Africa. The ultimate impact of extreme heatwaves on children in these regions will depend on many factors, including duration and intensity, as well as the capacity of societies to adapt. While all regions are projected to see more children exposed to extreme **wildfires** in the 2050s, the greatest increases in exposure from the 2000s are expected in Eastern and Southern Africa as well as West and Central Africa.

The greatest increases in exposure to extreme **river floods** are expected in the Middle East and North Africa, South Asia, Eastern and Southern Africa, West and Central Africa and East Asia and the Pacific. The Middle East and North Africa and West and Central Africa also are projected to see the greatest increases in exposure to extreme **droughts**.

Severe tropical storms – cyclones, typhoons and hurricanes – are highly destructive forces emerging from areas of very low pressure of warm ocean waters. In the 2050s, East Asia and the Pacific will continue to face the highest level of exposure to extreme **tropical cyclones**. The greatest increases in children's exposure from the 2000s to the 2050s are expected in East Asia and the Pacific, Eastern and Southern Africa and South Asia.

Impact on children

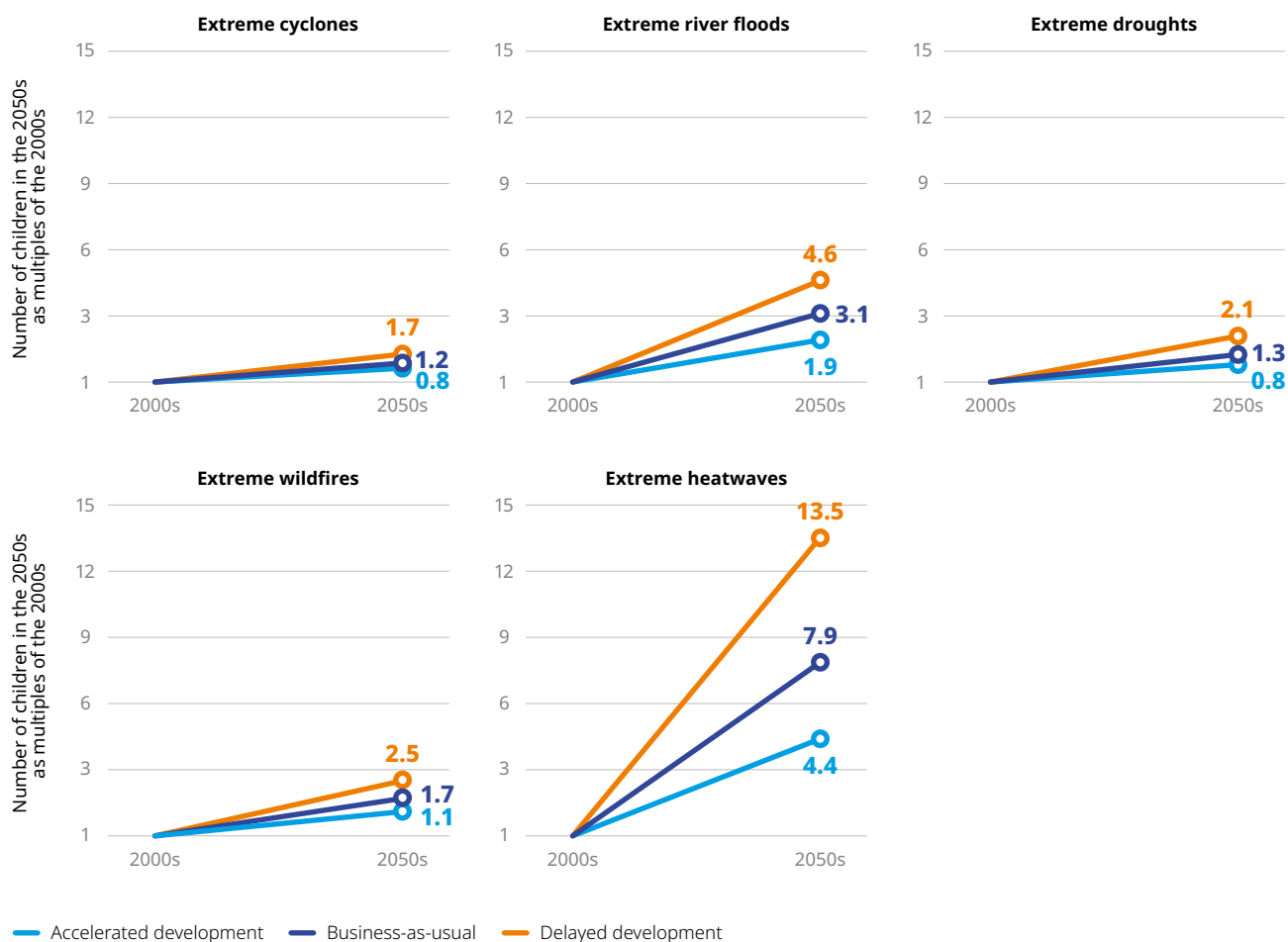
Children are uniquely vulnerable to climate and environmental hazards – with dangers that increase exponentially as climate change puts people and the planet at ever-increasing risk.³⁷

From before they take their first breath, children's brains, lungs and immune systems are affected by their environments – by the quality of the air, exposure to disease, the shock of heat and stress.³⁸

Climate and environmental hazards vary in frequency, severity and geographic location; as such, their effect on children's lives depends on these variables.³⁹ However, exposure isn't the only factor. The impact of these hazards on children's lives also depends on the individual child's vulnerability, which is influenced by factors including their age, health, socioeconomic background and access to resources. For example, for a child living in a community without safe, cool places, sufficient clean water, health care and reliable shelter, a heatwave can have very different impacts than for a child living in a community that has access to these services.

Greater numbers of children are expected to be exposed to extreme climate and environmental hazards.

Figure 2.14 Three scenarios for the increase in the number of children exposed to extreme climate hazards in the 2050s, expressed as multiples of the 2000s



The data presented in this report show children's exposure to extreme hazards under different future scenarios but do not measure children's vulnerability. Although exposure data are not sufficient to understand the full impact on children, these data offer a critical warning and underscore the urgent need for targeted measures to protect vulnerable children and mitigate the risks they face.



Source: UNICEF and the Wittgenstein Centre for Demography and Global Human Capital.

Chapter 3

The future is ours to shape



The scenarios presented in this report show that considerable progress has been made over the last several decades, which has improved children's lives and will continue to do so in the future. Child survival, life expectancy and education completion, for example, are expected to continue to improve across all three scenarios for the 2050s.

In other aspects of children's lives, the future appears less hopeful. The world could become a more unequal place, afflicted by conflict and extreme climate events, where the learning crisis only worsens and far too many children continue to experience multiple deprivations. We can and must do better.

Fortunately, we know more than ever about what works when it comes to realizing children's rights – not only in terms of research and policy and programme actions, but also the multiplier effects one intervention can have on other outcomes.¹

We are also grateful to children and young people for engaging with us on our research, policy and foresight work. It is through incorporating their ideas and perspectives that we have the best chance of finding solutions to new and complex challenges.² Meaningfully engaging them in governance and decision-making helps the global community understand their priorities; allows organizations like UNICEF to be more agile and responsive; and provides a platform for children and young people to be heard and taken seriously.³

Young voices

“When it comes to young people getting involved in civic activities, it’s about removing the complexities and the barriers. It’s also about grassroots engagement so that not only young people at the highest [socioeconomic] level are included.”

Joshua Opey, 26, Youth Foresight Fellow, Ghana

How do we reach the best scenario for children?

Our efforts should and must be grounded in the human rights instrument that has catalysed major global transformations in children's lives: the CRC, which has already guided efforts and yielded results for children for 35 years.

The CRC is the most widely ratified human rights treaty in history. It lays out important principles regarding respect for children's voices, agency and capabilities, in line with their evolving capacities from birth to the age of 18. In ratifying the CRC, governments have also signed up to a vision of a human society whose foundations lie in healthy and educated childhoods for all.

These principles matter even more today as the world witnesses backsliding in child rights, especially the rights of girls. Decades of progress, including legal protections, are now under threat. Recent reversals in child rights include repealing legislation on domestic violence; lowering or repealing the age of criminal responsibility; and curtailing access to education and sexual and reproductive health services for adolescent girls. As the Secretary-General noted last year:

In ratifying the CRC, governments have also signed up to a vision of a human society whose foundations lie in healthy and educated childhoods for all.

“Child rights today are often misunderstood, disregarded, or disputed. Despite progress across all regions, children – i.e., all human beings under 18 – are still largely regarded as the objects of adults’ goodwill; mere recipients of services; or solely as a ‘vulnerable group’, rather than individual subjects of rights and empowered agents in the exercise of their rights. A normative pushback against child rights is taking place globally, including in intergovernmental fora, threatening to undermine the integrity of international standards pertaining to children – for example in relation to gender or civil and political rights.”⁴

The Committee on the Rights of the Child – a group of 18 independent experts that monitors implementation of the CRC – distilled a set of four general principles against which they can measure how a government is performing in creating the systems needed to advance the rights of children in their country. These are: (1) the right to non-discrimination; (2) the best interests of the child; (3) the right to life, survival and development; and (4) the right to respect for the views of the child.

General principles

Non-discrimination (Article 2): States must ensure that all children within their jurisdiction enjoy their rights. No child should suffer discrimination. This applies to every child, “irrespective of the child’s or his or her parent’s or legal guardian’s race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status”. The essential message is equality of opportunity. Girls should be given the same opportunities as boys. Refugee children, children of foreign origin and children of indigenous or minority groups should have the same rights as all others. Children with disabilities should be given the same opportunities to enjoy an adequate standard of living.

Best interests of the child (Article 3): When the authorities of a state take decisions that affect children, the best interests of children must be a primary consideration. This principle relates to decisions by courts of law, administrative authorities, legislative bodies, and both public and private social welfare institutions. This is, of course, a fundamental message of the Convention, the implementation of which is a major challenge.

The right to life, survival and development (Article 6): The right-to-life article includes formulations about the right to survival and to development, which should be ensured “to the maximum extent possible”. The term ‘development’ in this context should be interpreted in a broad sense, including a qualitative dimension: It encompasses not only physical health, but also mental, emotional, cognitive, social and cultural development.

The views of the child (Article 12): Children should be free to have opinions in all matters affecting them, and those views should be given due weight “in accordance with the age and maturity of the child”. The underlying idea is that children have the right to be heard and to have their views taken seriously, including in any judicial or administrative proceedings affecting them.

As we navigate both new and ongoing challenges for children, these four principles spotlight what the focus of our policies and plans must be, in order to ensure that children inherit a habitable planet; enjoy a minimum standard of living; access quality learning and education systems equipped with enough teachers; and benefit from a more equal society and peaceful world.

In terms of how these rights can be realized, the CRC emphasizes **the primary responsibility of parents** for their children’s upbringing and development. It underlines that the family is the fundamental unit of society and underscores parental rights and responsibilities, while limiting state interference in family life. Critically, however, it also encourages states to support parents and communities in their caregiving roles and to respect parental guidance and direction.

Governments, in turn, must also be held accountable for their commitment to incorporate the CRC into domestic law and to ensure adequate funding is allocated to the promotion and protection of children's rights. They must strengthen children's access to justice and create legal systems that are not only accessible and child-friendly but also responsive to children's unique needs.

Governments must also adopt and enforce regulations that hold businesses accountable to the CRC principles. Investing in high-quality data and rigorous research is a first step to better understanding emerging trends and potential scenarios, providing a solid foundation for effective, future-orientated solutions.

Most recently, General Comment 26 marks a historic first in explicitly affirming children's right to a clean, healthy and sustainable environment.⁵ This landmark guidance, informed by thousands of children across 121 countries, **requires that governments conduct child rights impact assessments for environmental decisions and take urgent action**, as delayed responses to climate change will result in foreseeable harm to child rights.

Young voices

"Leaders should prioritize long-term decision-making that benefits not only the current generation but also future generations. It is crucial to work together towards a more inclusive, equitable and environmentally conscious world for all."

U-Reporter, 23, female, Fiji

Meeting the megatrends

The megatrends highlighted in this report are only three of many that will determine what the world looks like for children by the middle of this century. However, as the United Nations has recognized, these three megatrends will hold great sway over future outcomes – and they highlight why we must take a more anticipatory approach to realizing children's rights.

UNICEF recommends that governments, businesses, public sector, non-governmental and human rights organizations, and civil society use the CRC and its guiding principles to shine a light on solutions and point us towards the best scenario we can deliver for children.

When considering policies that anticipate and manage **demographic transitions**, the principles of non-discrimination and right to development, for example, can guide decision-makers to invest in quality education, skill development and more teachers; greater access to health care services; and child-responsive cities.

In response to the **climate and environmental crises**, the principle of the right to life, survival and health – along with General Comment 26 of the CRC – underscores the urgency of addressing the crises' impact on child rights. These principles call for investment in climate-resilient infrastructure for schools, homes, health-care systems, social supports, green technology, climate education and policy reform to phase out fossil fuels.

As we collectively try to keep pace with **frontier technologies**, safeguarding children, their lives and health, including their mental health, must be a priority. Children must be encouraged

to participate in the design and implementation of new regulations and governance to ensure that both old and new technologies meet their needs and are safe to use.

Crises and shocks tend to disproportionately affect people in poverty.⁶ Therefore, while implementing the recommendations that follow, **it will be essential to maintain a focus on reducing and eliminating child poverty**, so that inequalities do not widen and poor children are not left even further behind due to demographic shifts, digital transformation and climate change.

As we look to 2050, we have identified three leverage points across the three megatrends discussed in this report, where we can tilt the scales in favour of children's future and future children.

Young leaders' visions for 2050

What does the future hold for child rights, and how can we shape a better world? To answer these questions, UNICEF Innocenti's Youth Foresight Fellows held more than 50 workshops across 12 countries this year. The Fellows led national projects using foresight tools, engaging with more than 800 children worldwide. The Fellows' *Young Visionaries: Child rights youth foresight report 2024* reveals potential horizons for child rights through mid-century – and how we can create a better future.

1. Invest in education and other essential services for children and child-responsive cities.

Impacts of demographic transitions will vary according to each country context. Countries with a growing proportion of young people must plan ahead if they want to attain a demographic dividend. Where children become a smaller share of the population, countries should ensure that public services remain accessible and that neighbourhoods are 'child-friendly'. Multiple actions are required.

- **Invest in early childhood, primary and secondary education; upscale hiring and expand teacher training; and create jobs for young people:** When the labour force grows more rapidly than the dependent population, governments need to prepare. Expanding educational facilities and staffing, ensuring adolescent girls' access to quality secondary education and providing young people with employment opportunities is essential.
- **Expand social protection systems that support children and families:** Policies should be shock-responsive and include paid parental leave, universal child benefits and targeted investments at all stages of children's lives.
- **Ensure access to inclusive maternal and child health services and reproductive and sexual health services:** Governments must enable families, and particularly adolescent girls and boys, to make informed decisions about childbearing through access to a full suite of services. This includes supporting access to comprehensive sexual education, which can help young people make informed decisions while also serving to promote greater gender equality in the process of family decision-making. Social and behavioural change strategies can help to eliminate gender-based discrimination, including the use of violence, and other harmful practices.

- **Ensure access to other essential services:** including social support systems, and water, sanitation and hygiene.
- **Invest in sustainable and resilient cities for children:** This starts with adapting national urban plans to create child-responsive cities and transforming neighbourhoods into nurturing spaces for children to play and grow; it requires enhancing urban resilience and disaster risk reduction strategies, promoting a green transition and building infrastructure and transport that allows children to travel safely to school; it demands support for marginalized children, including children with disabilities. In rural areas, which may be experiencing depopulation, this means ensuring equitable access to essential services such as education and health care.
- **Ensure intergenerational equity in ageing societies:** As life expectancy increases and people live longer, children's rights must remain a priority. Public services, including education and health care for children, must remain adequately funded and inclusive. Policies must be designed to support intergenerational solidarity, promoting mutual support between young and old.

2. **Expand climate resilience in infrastructure, technology, education and other essential services.**

Reducing carbon emissions to 'net zero' by 2050 is the only sustainable solution to the climate crisis. In the meantime, adaptation and resilience efforts are equally essential. They include these steps:

- **Prioritize children's environmental health and protection in planning and policy:** Develop front line and caregiver capacity and safeguard access to quality health care, food and water for children and families.
- **Integrate climate resilience into local planning and infrastructure:** Emergency preparedness, disaster risk reduction and climate change adaptation require comprehensive strategies that anticipate climate-related hazards and mitigate their impacts on communities. Planners should incorporate climate resilience into every aspect of urban development, including schools, health centres, and water, sanitation and hygiene services.
- **Invest in climate education:** It is crucial to equip children with the knowledge and skills needed to understand climate change and to actively contribute to building a sustainable future and just transition.
- **Ensure National Adaptation Plans, Nationally Determined Contributions and related financial assistance address the specific needs of children:** Children's unique vulnerabilities and needs must be integrated into strategies, policies and programmes.
- **Invest in renewable energy and storage and promote local renewable solutions to cut emissions by 43 per cent by 2030:⁷** To that end, it is important to raise public awareness, especially among young people, to influence policy reforms and end fossil fuel use. Financing child-focused climate action and investing in green technologies will also drive sustainable development and benefit communities. Successful clean energy transitions need to be just, inclusive and grounded in intergenerational equity.
- **Promote environmental sustainability through comprehensive practices:** Decision-makers should implement large-scale reforestation and ecosystem restoration projects to preserve biodiversity, improve air quality and reduce environmental degradation. They should also strengthen waste management by reducing plastic use, regulating emissions and promoting recycling to combat pollution and encourage sustainable land and water management practices that enhance ecosystem resilience.

Together, these efforts will create a healthier environment for children, ensuring clean air, safe water and access to green spaces.

3. Deliver connectivity and safe design for all children.

To protect children from the risks and provide equal access to the advantages of frontier technologies, governments must adopt and enforce robust, ethical and fair regulations, in consultation with children – and businesses must enforce them promptly and in good faith. This goal can be reached with the steps listed.

- **Focus on digital equality for every child:** Governments and the private sector must work together to ensure that all children in all countries have equitable access to digital technologies. For many, this means investing in electricity and digital infrastructure, especially in underserved urban communities and rural areas, to provide internet access and affordable devices. For others, it means supporting child well-being in children's always-online lives, or else addressing normative barriers that prevent participation in the digital realm. All states must leverage frontier technologies through strong governance frameworks, digital public infrastructure and goods, and investment in local technology ecosystems.
- **Promote digital literacy and digital skills among children and educators:** Children can make exponential gains in digital skills development by learning it within the formal education system; at the same time, children must be provided with opportunities to use digital technologies and learn digital skills outside of school. Use of digital tools should empower and complement – not replace – teachers. We need to better anticipate what digital skills will be most useful for children between now and 2050 and adapt the training of teachers – and education systems – accordingly.
- **Adopt or strengthen legislation and effective governance systems to protect children's rights and well-being:** Professionals working in education, protection, law enforcement and justice systems must be upskilled to ensure they are up to date with new and relevant technologies, as well as issues facing children in the digital age. Adopt or strengthen legislation to account for new crimes in digital and other frontier technology environments, with a strong focus on safeguarding children and their rights, including their right to informed and meaningful consent to use. Adopt and enforce ethical guidelines for the development and implementation of new technologies, with a focus on privacy, data protection, transparency and accountability.
- **Use a rights-based approach to governance and development of new technologies:** Governments must put in place regulations and governance systems to ensure that businesses take a transparent and rights-based approach when developing, piloting, using and commercializing technologies. These measures are essential to safeguard children and avoid, minimize or mitigate potential risks. Oversight bodies and mechanisms must be put in place at state and multilateral levels to anticipate future risks and hold accountable those who cause harm to children. Critically, robust evaluations and risk assessments of new technologies should account for inclusivity and sustainability.

Young voices

"Youth engagement is no longer a luxury. It is a necessity."

Nahjae Nunes, 22, Youth Foresight Fellow, United States and Jamaica

Conclusion

The end of the 2030 Agenda for Sustainable Development marks a time to reflect on what held back progress for children over the past 15 years and what drove success. This report and its recommendations highlight some crucial leverage points that governments, the private sector, civil society and all of us can use.

As we face unprecedented demographic shifts, climate and environmental threats, and technological transformation, we need to take decisive, collaborative action that creates a path of global synergy, rather than one of further fragmentation and isolation.⁸ Equally important will be the financial plans, policies and investments governments commit to delivering in preparation for the world of 2050.

In 2050, when we look back on this time and measure our relative success or failure to reach the best possible scenario for children, we hope to be able to say that our actions were guided by the CRC, backed by the best evidence and driven by what is best for our children, grandchildren and collective futures.

Where to start?

Given the many challenges countries face, establishing priorities will be essential. Not all aspects of the rapidly changing world are equally felt by all countries, communities, families and children. Below is a guide for different categories of countries. It includes suggestions, based on country category, for focusing resources to address the three megatrends covered in this report.

Country category	Category characteristics	Priority actions
Large child populations; rapid population growth	Large and increasing child population	Invest in education to build human capital by expanding access to quality schooling.
	Rapid demographic growth	Enhance child health services, such as immunization, nutrition and maternal care.
	Early stages of demographic transition	Empower women and girls by implementing programmes that promote gender equality.
	Examples: Africa, parts of South Asia and the Middle East	Develop child-sensitive urban planning by creating safe and inclusive spaces for children and young people. Design and implement child-sensitive climate adaptation and disaster risk reduction policies and strategies.

Country category	Category characteristics	Priority actions
Ageing populations and low birth rates	Low fertility rates Ageing population Shrinking child population Examples: Europe, East Asia, North America	Strengthen child rights frameworks by reforming policies and national laws to realize children's rights. Support family policies, such as paid parental leave, affordable childcare and financial assistance. Adapt to demographic shifts, with a focus on age-friendly infrastructures. Lead sustainable development efforts, reducing reliance on non-renewable energy and fostering green energy initiatives. Innovate for ageing populations while also addressing children's needs by e.g., fostering intergenerational programmes.
Middle-income with growing urban populations	Significant urbanization Growing middle class Urban poverty and inequalities Example: Latin America, South-Eastern Asia, parts of South Asia	Develop child-sensitive urban planning by designing safe public spaces, accessible schools and health care facilities in densely populated areas. Mitigate urban inequalities by expanding affordable housing and improving public services. Build urban resilience to climate change by investing in green infrastructure and disaster risk reduction plans. Support inclusive economic growth by creating policies that promote job creation, entrepreneurship and social protection systems.
Low-income, fragile, conflict-affected	Conflict, instability, weak governance High poverty levels Vulnerable child population Example: parts of Sub-Saharan Africa, the Middle East, South Asia	Strengthen access to justice for children, ensuring that children's rights are upheld. Implement emergency education programmes, ensuring access to education in crisis settings. Provide humanitarian assistance by delivering essential services such as food, health care and safe shelter. Integrate child rights into peacebuilding, focusing on involving children and youth in peace processes. Focus on climate resilience in fragile settings by developing and implementing strategies to protect communities from climate and environmental shocks.
High-income with advanced technology sectors	Industry-leading technology and innovation Advanced economy Widespread societal impacts of rapid technological change Examples: North America, Western Europe, East Asia (e.g., Japan, the Republic of Korea)	Regulate emerging technologies to protect children's rights. Invest in digital literacy. Promote responsible innovation. Lead sustainability and green technology. Invest in research on technology's impacts on children.

Country category	Category characteristics	Priority actions
Significant digital divide	Large gaps in access to digital technology	Invest in digital infrastructure and ensure equitable access to technology.
	Deep inequalities	Promote digital literacy and education for children and youth.
	Example: parts of Africa, rural areas in various regions	Implement policies to bridge the digital divide, especially in underserved communities.
		Encourage responsible use of technology.
Small Island Developing States and climate-vulnerable regions	Existential threats from climate change	Prioritize climate adaptation and resilience by investing in coastal defences, early warning systems and enhancing infrastructure.
	Limited resources	Enhance disaster-preparedness and response systems by improving local emergency planning.
	High vulnerability to environmental degradation	Promote sustainable economic development by supporting green initiatives, including sustainable tourism.
	Examples: Caribbean, Pacific Islands, parts of South-Eastern Asia, the Sahel, Horn of Africa	Integrate climate education into schools by incorporating climate change and environmental sustainability into curricula.
		Advocate for stronger international climate commitments, pushing for increased financial support and more ambitious targets from the international community.

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Technical annex



Data and research in *SOWC 2024* are drawn from multiple sources to explore the trends and forces shaping the lives of children in the future. These sources principally include UNICEF global databases, interagency research papers, peer-reviewed academic journals, the World Bank and other United Nations organizations, in particular *World Population Prospects (WPP 2024)* from the Department of Economic and Social Affairs.

Working with the Wittgenstein Centre for Demography and Global Human Capital in Austria, *SOWC 2024* also presents data developed using SSPs, paired with climate scenarios projected using the Representative Concentration Pathways (RCPs).

Timeframes

Throughout the analyses, decadal averages from the 2000s to the 2050s under various scenarios and population projection variants are provided to reduce the impact of potential outliers in single years. The data for the 2000s are the average of every year between 2000 and 2009; the data for the 2050s are the average projection for each year from 2050 to 2059. The focus is to present a comparison between the start and the middle of the century. Some exceptions apply where data availability is restricted. To ensure consistency and comparability, decadal averages were computed for data based both on Shared Social Pathways and on World Population Prospects.

Regional classifications

Regional statistics refer to the UNICEF programme regions and countries in the regions covered by UNICEF National Committees. For the purposes of this report, the regions are defined as:

East Asia and the Pacific

Brunei Darussalam, Cambodia, China, the Democratic People's Republic of Korea, Fiji, Indonesia, Kiribati, the Lao People's Democratic Republic, Malaysia, the Marshall Islands, the Federated States of Micronesia, Mongolia, Myanmar, Nauru, Palau, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, Viet Nam

Eastern and Southern Africa

Angola, Botswana, Burundi, Comoros, Eritrea, Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, Somalia, South Africa, South Sudan, the United Republic of Tanzania, Uganda, Zambia, Zimbabwe

Europe and Central Asia

Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Greece, Kazakhstan, Kyrgyzstan, Montenegro, North Macedonia, the Republic of Moldova, Romania, Serbia, Tajikistan, Türkiye, Turkmenistan, Ukraine, Uzbekistan

Latin America and Caribbean

Antigua and Barbuda, Argentina, the Bahamas, Barbados, Belize, the Plurinational State of Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, the Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, the Bolivarian Republic of Venezuela

Middle East and North Africa

Algeria, Bahrain, Djibouti, Egypt, the Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, State of Palestine, Qatar, Saudi Arabia, the Sudan, the Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen

North America

Canada, the United States of America

South Asia

Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka

West and Central Africa

Benin, Burkina Faso, Cabo Verde, Cameroon, the Central African Republic, Chad, the Congo, Côte d'Ivoire, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, the Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo

Western Europe

Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland

Other

Australia, Israel, Japan, New Zealand, the Republic of Korea, Singapore

Income classifications employed for regional aggregates are based on 2024 World Bank income classification data found here: <https://blogs.worldbank.org/en/opendata/world-bank-country-classifications-by-income-level-for-2024-2025>.

Global aggregates include all available countries, regardless of membership in UNICEF programmes or availability of income classification.

Demographics

Wherever only population projections are required, with no projection of contextual data in the SSP framework, *WPP 2024* are used to estimate the number of children.

To estimate where most children will live in the world by 2050, historical and projected population estimates are also sourced from *WPP 2024*.

For projections of demographic data, *SOWC 2024* uses the terminology of *WPP* to describe different scenarios: low variant, medium variant and high variant.

The SSPs

Socioeconomic development scenarios are generated in the SSP framework. The SSPs are a widely used set of scenarios-based assumptions about how forces of change might affect the world over time. *SOWC 2024* models climate scenarios with RCPs.

SOWC 2024 investigates three SSP–RCP scenarios that represent distinct, stylized narratives of development trajectories. Models employing the SSP–RCP framework are the basis for the data on urbanization, socioeconomic conditions, education, gender equality, health outcomes, conflict and climate.

Accelerated development: In a future characterized by sustainability and ‘taking the green road’, this scenario foresees investments made in education, health, and climate change mitigation and adaptation. Cooperation increases globally and regionally, and inequality declines between and within countries (SSP1, RCP2.6).

Business-as-usual development: In a future characterized by ‘middle-of-the-road’ business as usual, this scenario projects the status quo for investments, uneven economic development, barriers to cooperation and trade, and persistent inequalities. Historical patterns extend into the future, with moderate economic growth and greenhouse gas emissions, and moderate challenges to climate mitigation and adaptation (SSP2–RCP6.0).

Delayed development: In a future characterized by regional rivalry, this scenario anticipates that conflict will hinder global development, eroding the influence of international institutions, investment in environmental protection and human capital, and impetus to reduce production of greenhouse gases. In this future, population growth decreases in high-income countries but increases in lower-income countries. Challenges in climate mitigation and adaptation are high (SSP3–RCP8.5).

The SSP population projections are employed in connection with other SSP-based data. In contrast to *WPP*, the SSP population projections are produced not in single ages, but five-year age groups based on Lutz et al.’s analysis from 2018. Since children are defined as those younger than 18, *SOWC* assumes a uniform age distribution in the age group 15–19 to calculate the number of children in the SSPs. Notably, it uses Version 2 of the SSP populations, since the back-projections in Version 3 were not complete as of July 2024.

To analyse future risks that the world’s children may face under various socioeconomic and environmental scenarios, *SOWC* adopts the Intergovernmental Panel on Climate Change’s *Fifth Assessment Report* risk framework. Here, risk is defined as the intersection of exposure, hazard and vulnerability. ‘Exposure’ refers to the child population in the respective location, ‘hazard’ to contextual factors with potentially adverse consequences and ‘vulnerability’ to factors that influence the susceptibility of children to various hazards. Climatic hazards, such as heat and drought, are determined by natural variability and anthropogenic climate change, while exposure and vulnerability depend on socioeconomic factors, including adaptation and mitigation actions. Crucially, there are feedback loops between climatic and socioeconomic processes.

Urbanization

The number of children located in urban settings is computed based on projections from Chen et al.: The authors provide country-level urbanization rates from 1950 to 2100 in five-year steps for SSPs 1–3. These scenarios are based on the historical values from the United Nations *World Urbanization Prospects 2018*. The number of children living in urban settings is estimated by multiplying the urbanization rate with the number of children in a country. Since the urbanization rates are not projected on the subnational level, we assume that the urbanization rate of children is equal to the urbanization rate of the total population.

Socioeconomic conditions

In this section, *SOWC 2024* takes two complimentary approaches. First, child populations of *WPP* are grouped based on the 2024 income classification of the World Bank into low-, lower-middle-, upper-middle- and high-income countries. Here, future changes of populations are taken into consideration but not changes of income. Second, the updated SSP GDP projections of Koch & Leimbach from 2023 are employed to investigate how populations and income develop jointly in the SSP framework. To obtain the average GDP per capita under which children live in the regions identified in this report, *SOWC 2024* weights countries according to their child population. The figures are expressed in constant 2017 international dollars at purchasing power parity.

Education

Educational outcomes are based on SSP population projections produced by age, sex and education, facilitating the analysis of possible future trajectories of educational attainment among young adults (Lutz et al 2018). *SOWC 2024* focuses on the age group 20–24, which is the first five-year age group to fall within the ages when all educational opportunities available in childhood are completed. In line with the Millenium Development Goals and the SDGs, *SOWC 2024* focuses on the number and share of children that have at least primary and upper secondary education, respectively. To explore different educational attainment of girls and boys, the report calculates the difference in the share of girls and boys aged 20 to 24 with primary and upper secondary education. Statistics on historical pupil–teacher ratios, school starting ages and net enrolment rates are retrieved from the World Bank.

Gender equality

Estimates of how many children live in societies with large inequalities between men and women draw on the Andrijevic et al. projections of the United Nations Gender Inequality Index (GII) from 2020, along with the SSPs. The GII captures three aspects of inequality: maternal mortality and adolescent fertility rates; male-to-female ratios of secondary educational attainment and of parliamentary seats; and labour force participation. Countries with GII values above 0.5 are defined to exhibit high gender inequality.

Health outcomes

Statistics on health outcomes are derived from SSP population projections of two key outcomes: life expectancy at birth and age-specific survival ratios. The former calculates both averages for the total population and averages in female and male populations, in order to highlight differential outcomes. The later uses age-specific survival ratios to capture the probability of surviving a given age group, differentiating between newborns and children aged 0–4, 5–9 and 10–14.

Conflict

Estimates of children's exposure to conflicts are obtained based on Hegre et al.'s analysis from 2016, which estimated conflict probability under the SSPs based on countries' history of conflict, the heterogeneity and size of their population, and the level of socioeconomic development. Here, GDP is assumed to remain unaffected by conflicts; Petrova et al.'s 2023 model, meanwhile, also takes into account the feedback of conflicts on economic output. To keep the GDP trajectories consistent with the socioeconomic section of the report, *SOWC 2024* relies on the data of Hegre et al. The start of projected conflict probabilities is 2014. The occurrence of conflicts is reported for earlier years. To harmonize the historical and projected data, *SOWC 2024* calculates the country-level conflict probabilities for 2000–2009 and 2010–2013, before averaging over decades. Children are defined to be at risk of conflicts if the average conflict probability is greater than 0.5.

The climate and environmental crisis

The calculations of children's future exposure to environmental hazards are based on Lange et al. (2020) who provide a large, harmonized collection of exposure projections for six hazard categories. The baseline period is chosen as 1995–2004, under historical climate, which is compared with decadal averages from the 2010s to the 2050s under climate change. The model runs are based on four different general circulation models, which are each coupled with several impact models, depending on the hazard. The models provide $0.5^\circ \times 0.5^\circ$ rasters containing the fraction of the population exposed to at least one hazard event with annual frequency. These grid values are averaged first over decades, for each model and scenario, then over models for each decade and scenario. An important limitation of the data is that they do not capture the frequency, intensity, or duration of events that fulfil the criteria described below. The data do not provide information regarding the overlap of populations exposed in consecutive years (Lange et al. 2020).

To estimate child exposure to environmental hazards, SOWC 2024 obtains rasterized SSP populations from Wang et al. (2022) in five-year steps from 2020–2055. It scales the 2020 grid for each country to obtain population grids for 1995–2015, assuming that the population changes were proportional to the 2020 distribution within each country. The number of children on subnational level is estimated by assuming the child fraction is constant within countries – i.e., the number of children is proportional to the total population. The child population is then multiplied with the share of the exposed population before summing the values to country level. In the baseline period, hazard simulations under historical climate are combined with the historical SSP population estimates. For the future time periods, hazard scenarios under RCP2.6 are combined with population projections from SSP1, RCP6.0 with SSP2, and RCP8.5 with SSP3. The multipliers presented in the report are calculated by dividing the exposure in the 2050s by the baseline exposure under historical climate.

Definitions of extreme climate and environmental hazards and affected land areas

All definitions were drawn from *'Intergenerational Inequities in Exposure to Climate Extremes.'*

- **Heatwave:** an entire grid cell if the Heat Wave Magnitude Index daily (HWMId) of that year exceeds the 99th percentile of the HWMId distribution under pre-industrial climate conditions of that grid cell. The HWMId is defined as the maximum magnitude of all hot periods occurring in a year, where a hot period is a period of at least three consecutive days with daily maximum temperature exceeding a threshold value T_{pi90} , which is defined as the 90th percentile of daily maximum temperatures under pre-industrial climate conditions, centred on a 31-day window. The magnitude of each hot period in a year is the sum of the daily magnitudes on the consecutive days composing the hot period, with daily magnitude calculated according to $M_d(T_d) = 0$ if $T_d \leq T_{pi25}$ else $(T_d - T_{pi25}) / (T_{pi75} - T_{pi25})$, where T_d is the daily maximum temperature on day d of the hot period and T_{pi25} and T_{pi75} are the 25th and 75th percentile, respectively, of the annual maximum of the daily maximum temperature under pre-industrial climate conditions. To estimate T_{pi90} , T_{pi25} and T_{pi75} , we use more than 400 years of daily maximum temperature data at $0.5^\circ \times 0.5^\circ$ spatial resolution, representing pre-industrial climate conditions, as available from the ISIMIP2b climate input data set. Based on these >400 years of temperature data we subsequently derive the 99th percentile of the HWMId distribution under pre-industrial climate conditions [M:1, P:12].

- **Wildfire:** annual aggregate of monthly burned land area simulated by global vegetation models [M:5, P:53].
- **Drought:** entire grid cell if monthly soil moisture falls short of the 2.5th percentile of the pre-industrial reference distribution for at least seven consecutive months [M:8, P:86].
- **River flood:** assumed to occur whenever daily discharge ($0.5^\circ \times 0.5^\circ$ resolution) exceeds the pre-industrial 100-year return level (i.e., the 99th percentile); to derive the associated land area affected per grid cell, simulated runoff is translated into inundation areas ($2.5' \times 2.5'$ resolution) by CaMa-Flood [M:8, P:86].
- **Tropical cyclone:** fraction of grid cell exposed to one-minute sustained hurricane-force winds (≥ 64 kt) at least once a year ($0.1^\circ \times 0.1^\circ$ resolution); information required about wind fields is derived from centre location and minimum pressure/maximum wind speed [M:1, P:12].

Background materials

These materials provided substantial guidance for the data and research in the scenarios:

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