



# For every child, a living planet

Overview of UNICEF Climate, Energy,  
Environment and DRR

Data Needs and Barriers in the Area of Public  
Health and Air Quality

31 MARCH 2022

**unicef**   
for every child



# Summary



- 1. The climate crisis is a child rights crisis.** It affects all children's lives and has impacts throughout their life.

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- 2. Climate change disproportionately affects the poorest,** most vulnerable and marginalized, deepening existing inequities and perpetuating them over generations.

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- 3. Emissions cuts are the only long-term solution and will come too late for the most vulnerable children.**

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- 4. Adaptation and resilience is the best way to help these children now** through emergency response, disaster risk reduction, climate-resilient services...**and supporting children to be climate champions**

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- 5. UNICEF is:**
  - Providing water, health and education through disasters and climate impacts
  - Equipping children with the education and skills to adapt and create a better world
  - Working with governments and businesses to put children and their needs first

# The Children's Climate Risk Index (CCRI)

***The climate crisis is here. Every child is affected and one billion are at high risk.***

The CCRI utilizes data to generate new global evidence on **how many children are currently exposed to climate and environmental hazards, shocks and stresses;**

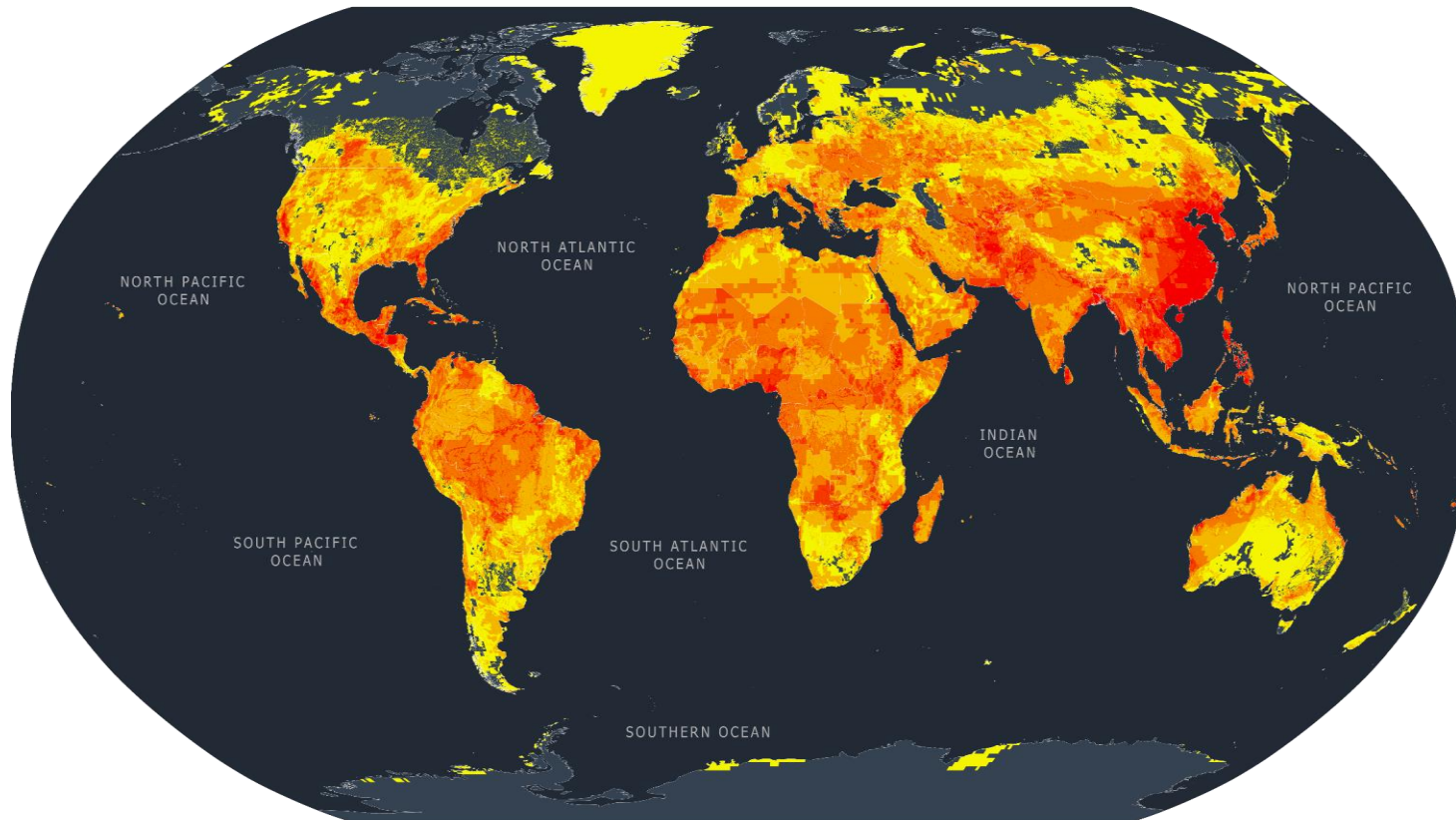
The CCRI is a composite index that analyses;

- 1. **Exposure to** climate and environmental hazards, shocks and Stresses;
- 2. **Child Vulnerability** based on the availability, quality, equity and sustainability of essential services for children, such as water and sanitation, healthcare and education.

The resulting index:

1. Gives us a **comprehensive view of climate risk from a child's perspective.**
2. Provides a **ranking of the places where children are at the most imminent threat.**

# Starting with a detailed look at multiple and overlapping climate and environmental hazards, shocks and stresses affecting children...



Number of Hazards,  
Shocks or Stresses

- Extremely High ( $\geq 5$ )
- High (4)
- Medium-High (3)
- Low-Medium (2)
- Low (1)

*Hazards:*

1. *Heatwaves*
2. *Cyclones*
3. *Water Scarcity*
4. *River Flooding*
5. *Coastal Flooding*
6. *Disease Risk*
7. ***Air Pollution***
8. *Soil and Water Pollution*



## Children Exposed to Specific Climate and Environmental Hazards

E.g.:

820 million children (over one third of children globally) exposed to heatwaves.

400 million children (nearly 1 in 6 children globally) exposed to cyclones.

330 million children (1 in 7 children globally) exposed to riverine flooding.

2 billion children (almost 90 per cent of children globally) exposed to air pollution

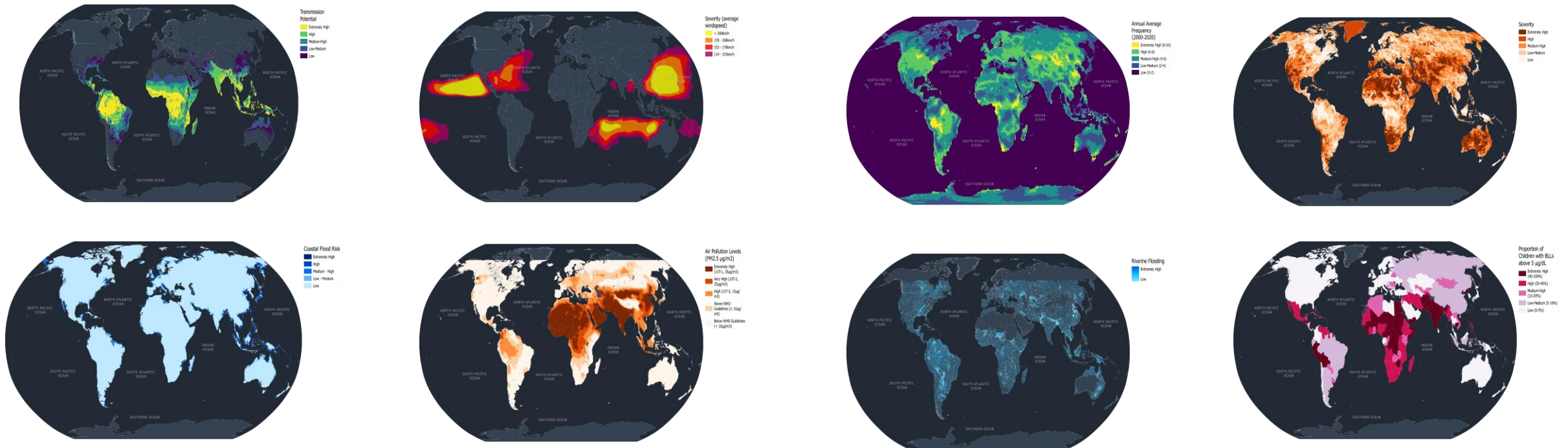
240 million children (1 in 10 children globally) exposed to coastal flooding.

## Children Exposed to Multiple Hazards at Once

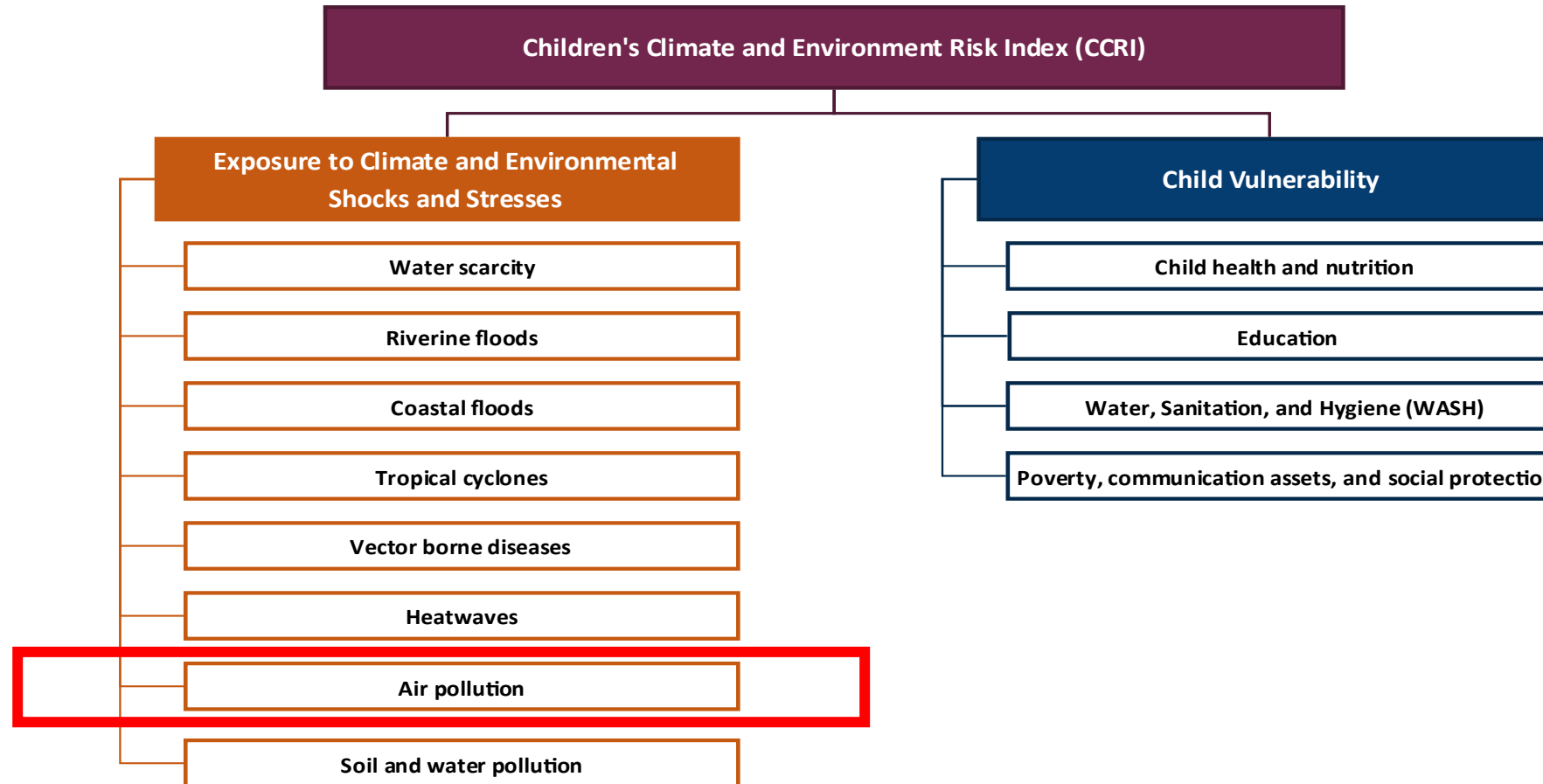
Almost every child (>99%) on earth is exposed to at least one of these climate and environmental hazard, shock or stresses.

Nearly 850 million children – over one third of all children – live in countries where they are exposed to four or more overlapping climate and environmental hazards, shocks and stresses.

330 million children exposed to more than five overlapping climate and environmental hazards, shocks, and stresses



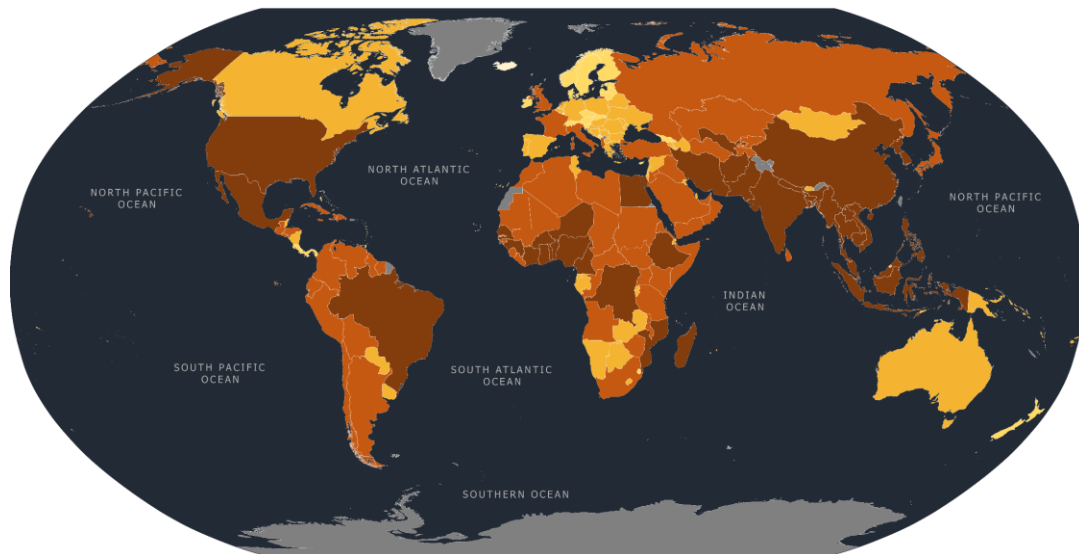
# The CCRI brings 57 variables together to measure risk across 163 Countries



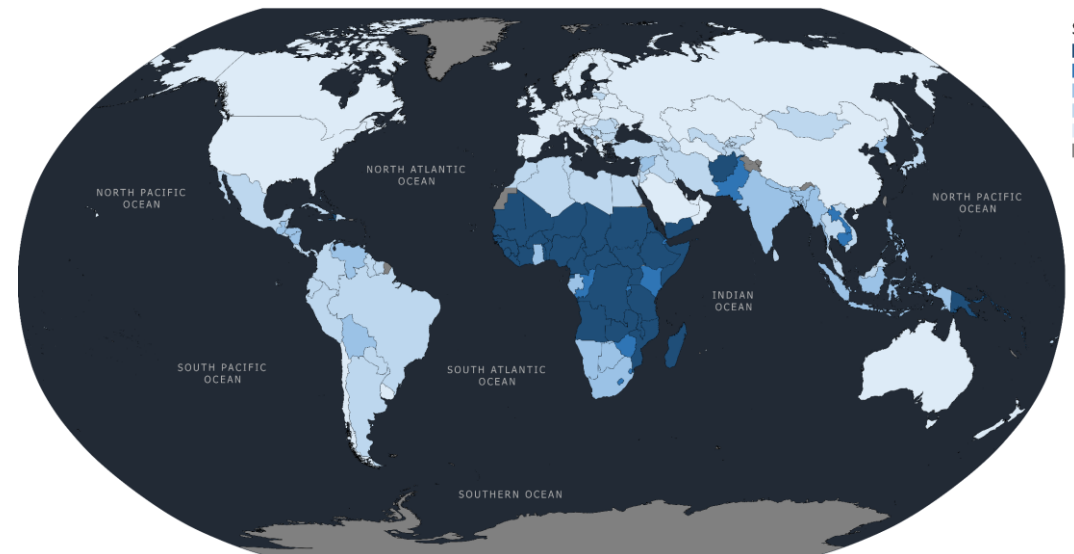
# ..and assesses climate and environmental hazards in the context of child vulnerability

**Pillar 1: Climate and environmental shocks, hazards and stresses**

**Pillar 2: Child Vulnerability (Health, Education, WASH, Poverty and Social Protection)**

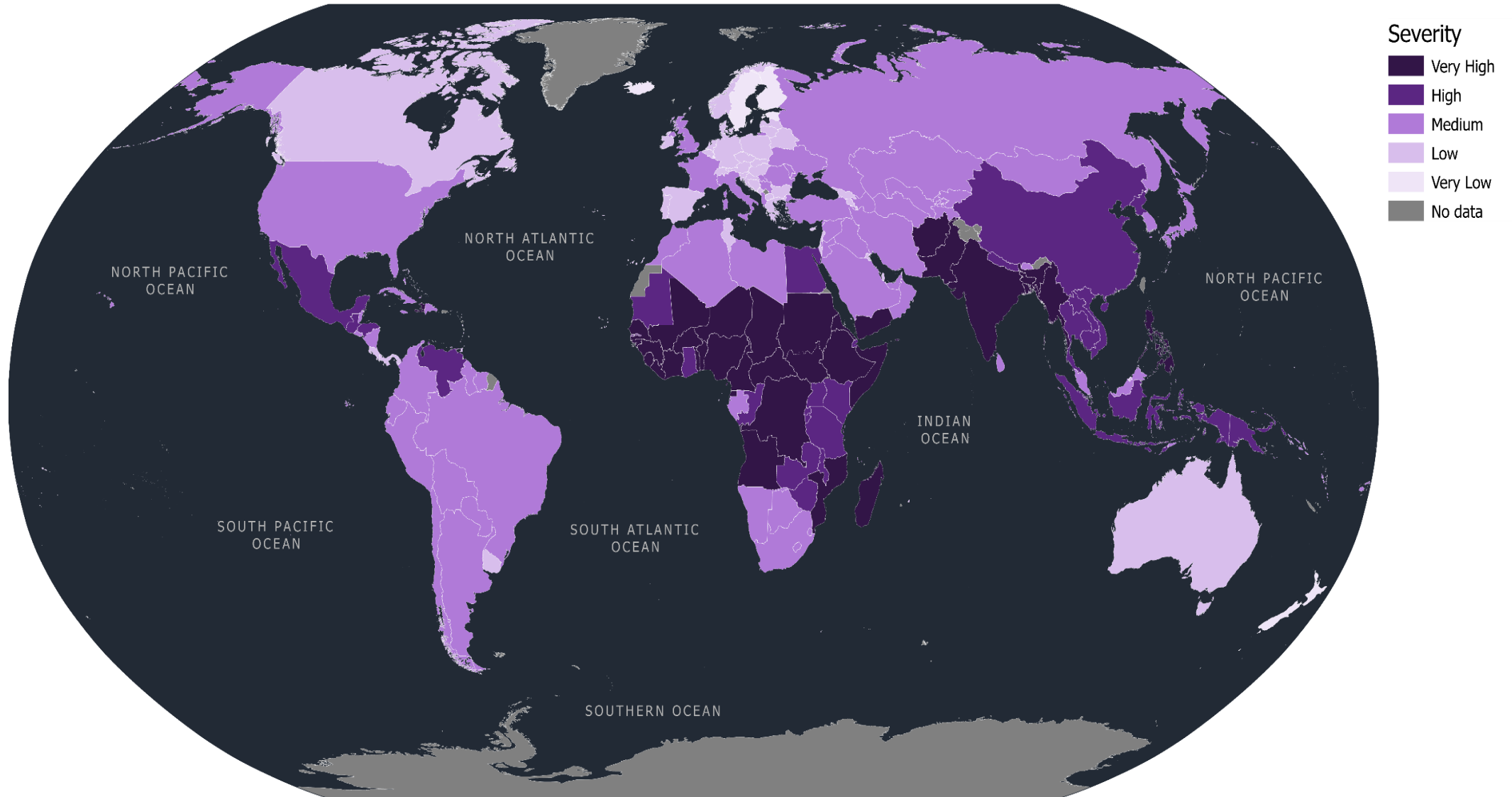


Severity  
 Very High  
 High  
 Medium  
 Low  
 Very Low  
 No data



Severity  
 Very High  
 High  
 Medium  
 Low  
 Very Low  
 No data

# The Children's Climate Risk Index





## What This Tells Us:

### How many extremely vulnerable children globally to climate change:

Approximately 1 billion children living in 33 countries are at an 'extremely high risk' from the impacts of climate change.

### Where the most vulnerable children are: [\(See list to right\)](#)

### It also provides:

- First ever children's climate index with rankings to evaluate progress over time
- Drives the point that children's vulnerability in lack of access to key social services increases their vulnerability and risk to climate change
- Highlights that the children who contribute least to the causes are the ones most at risk

The 33 extremely high-risk countries contribute least to the causes of climate change. The top ten contribute approx. 0.5% of global greenhouse gas emissions.

There is a lot we can do to improve outcomes for children, including investing in improving access to key social services.

### CCRI Rank:

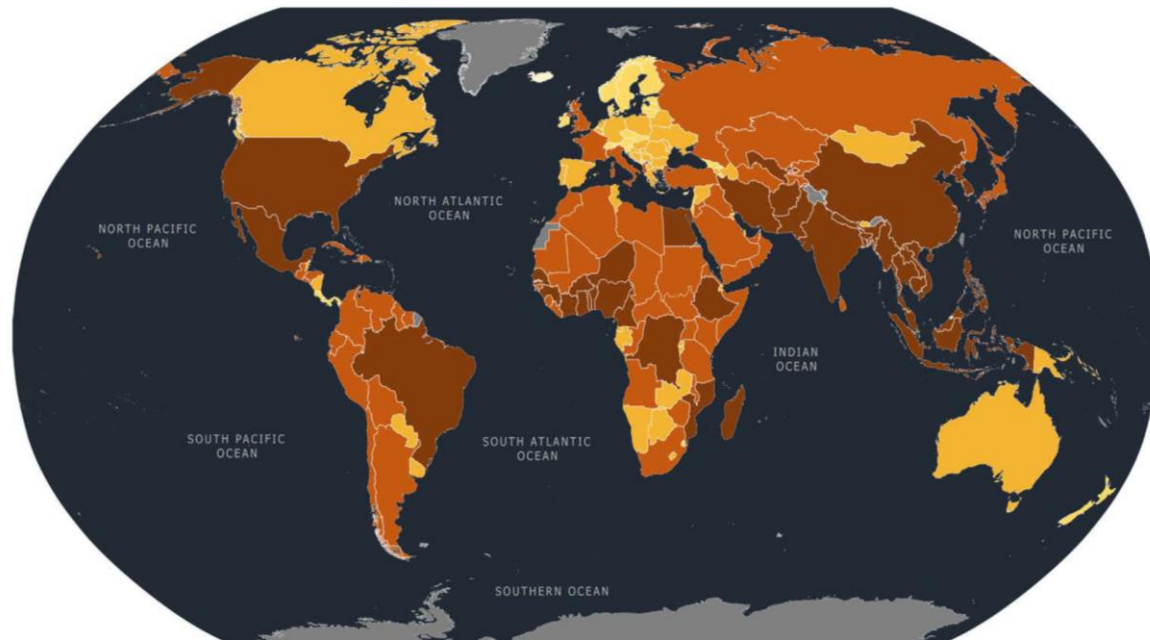
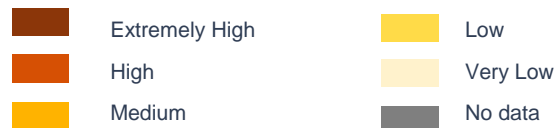
*Central African Republic,  
Chad,  
Nigeria,  
Guinea,  
Guinea-Bissau,  
Somalia,  
Niger,  
South Sudan,  
DRC,  
Angola,  
Cameroon,  
Madagascar,  
Mozambique,  
Pakistan,  
Afghanistan,  
Bangladesh,  
Benin,  
Burkina Faso,  
Ethiopia,  
Sudan,  
Togo,  
Cote D'Ivoire,  
Equatorial Guinea,  
Liberia,  
Senegal,  
India,  
Sierra Leone,  
Yemen,  
Haiti,  
Mali,  
Eritrea,  
Myanmar,  
Philippines.*



# The opportunity

UNICEF is uniquely positioned to address to:

- **Support the 4.2 billion children** born over the next 30 years to face climate challenges for their survival and well-being.
- **Protect the most vulnerable children** from severe shocks, help them adapt for their future, and give them the keys for a sustainable future
- **There is a strong return on investment: US\$1** has a US\$3 to \$50 return

**Severity**

**Regions where climate and environmental shocks and stresses are predominant**

## How do UNICEF programmes address climate change ? and how does data help?

- Access to resilient **WASH services** reduces risks for 415 million children

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- **Schools and education systems** reduces risks for 275 million children.

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- **Climate-smart health services** reduce risks for 460 million people

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- **Climate-responsive social safety nets** reduce risks for 310 million children

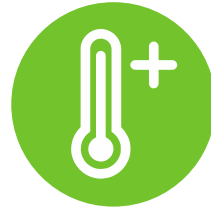




# The Challenges for Children



Social services are not resilient to the impacts of disasters



Climate and disaster risk policies and programmes are not focused on children's rights



Children and young people are not given enough opportunities to engage in climate change mitigation and adaptation



Limited knowledge on markets and sustainability

# UNICEF's Sustainable Response



Strengthen the sustainability of services to protect children and supporting sustainable markets for children



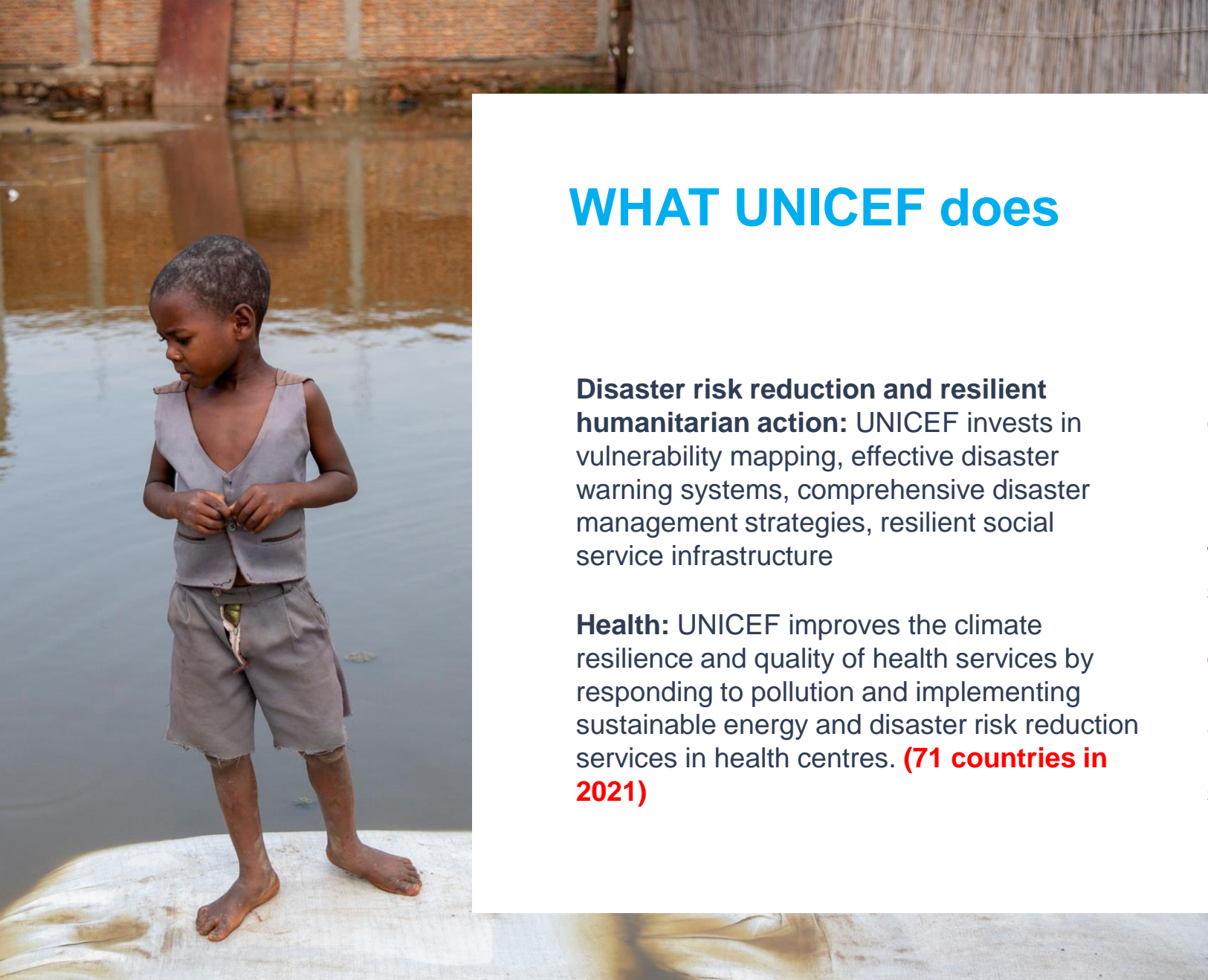
Increasing child sensitivity in climate policies and programmes and in disaster risk and recovery policies, strategies and plans



Supporting young people to be climate and environment champions

Walk the Talk





## WHAT UNICEF does

**Disaster risk reduction and resilient humanitarian action:** UNICEF invests in vulnerability mapping, effective disaster warning systems, comprehensive disaster management strategies, resilient social service infrastructure

**Health:** UNICEF improves the climate resilience and quality of health services by responding to pollution and implementing sustainable energy and disaster risk reduction services in health centres. **(71 countries in 2021)**

**Education and skills:** UNICEF supports children's sustainability education and skills and improves the accessibility of education through resilient schools **(75 countries in 2021)**.

**WASH:** UNICEF improves water and sanitation services in communities, so they are climate-resilient and the carbon footprint is reduced. **(57 countries in 2021)**

**Social protection:** UNICEF supports social protection systems to adapt to environmental shocks and stresses.





# Pillar 1: HOW UNICEF strengthens the sustainability of social services

## Funding

Improve allocation of domestic financing for water security and climate adaptation

## Infrastructure

Ensure that infrastructure can withstand climate-related events, strengthen communities' resilience, ensure services operate on low-carbon sources

## Systems

Support governments to strengthen social protection systems to cope with shocks and stresses

## Workforce

Build resilience of the workforce and increase their understanding to climate on the climate crisis

## Evidence

Improve the evidence on how climate change impacts children



## Pillar 2: **Increasing child sensitivity in climate policies and programmes and in disaster risk and recovery policies, strategies and plans**

- Ensure the needs of children and youth are integrated into climate change and environmental policies and strategies
- 
- Work with governments to ensure business practices don't degrade the environment children and young people depend



## Pillar 3: Support young people to be climate and environmental champions

- Support young people to be champions through education, development of green skills, and meaningful engagement in policy.
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- Work with national partners to promote education on climate change, the environment, and disaster risk reduction.
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- Elevate the voices of young people through creative platforms, advocacy and participation at United Nations summits.

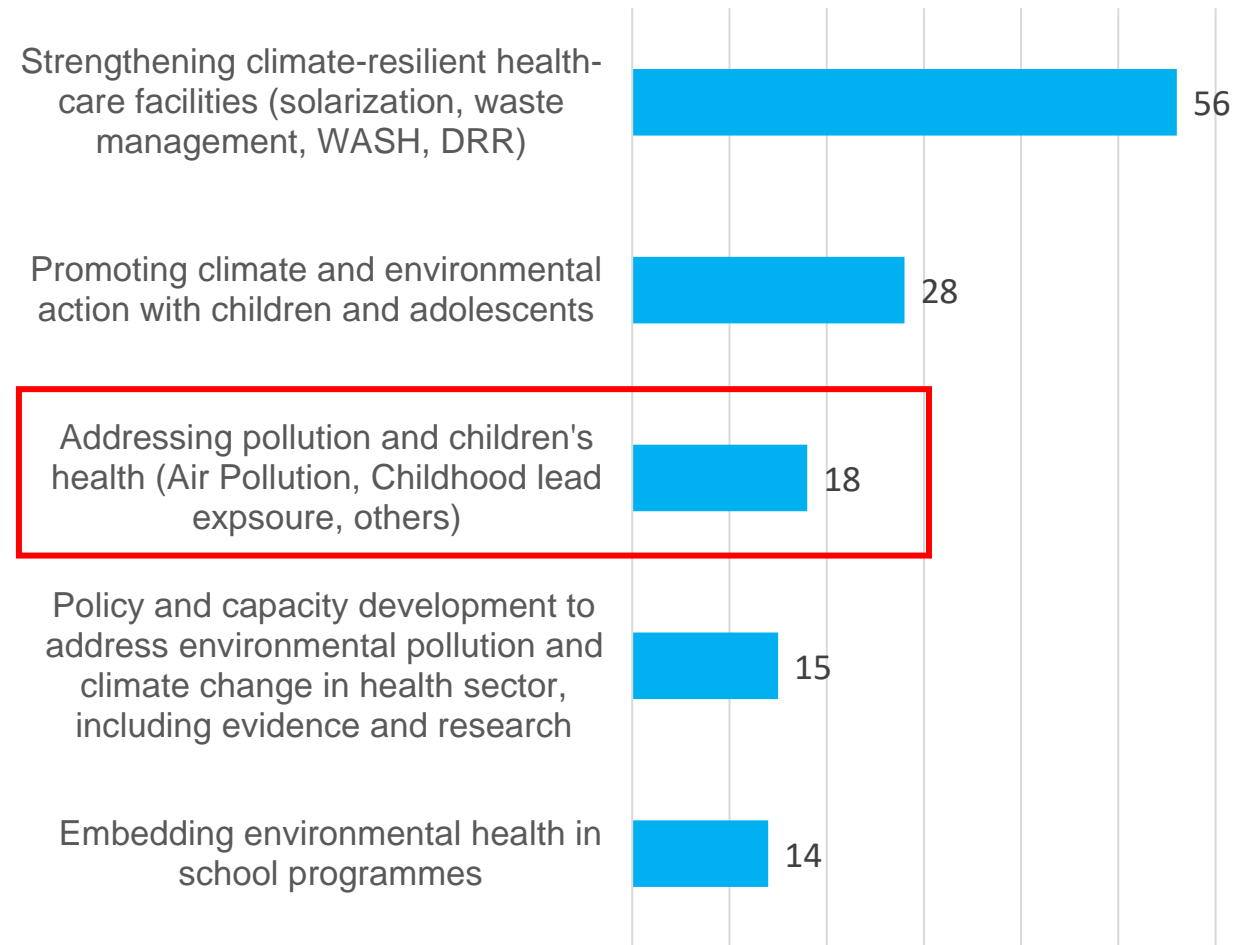




# Health: **Healthy Environments for Healthy Children- Scaling up...**

- Strengthening climate-resilient health care facilities in over 50 countries and promoting climate and environmental action with children and adolescents
- Developing health system capacities: for example, WHO/UNICEF MOOC on children's environmental health for health workers
- Rolling out global communication and advocacy assets for rapid national and local adaptation, in collaboration with WHO and UNEP
- Scaling up access to safe drinking water, sanitation in hygiene [UNICEF's WASH programme]
- Mobilizing implementation-focused collective action (for example, the [protecting every child's potential initiative](#) on childhood lead exposure)

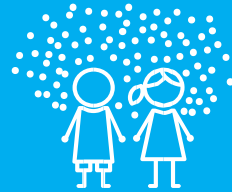
## Number of countries implementing HEHC interventions



# Action to address Air Pollution: **UNICEF** areas of intervention



Reduce air pollution



**Establish multi-sectoral partnerships to address air pollution**



Community awareness and education through health facilities, schools and mass/social media



Prevent children's exposure to air pollution & Improve children's health so that when they are exposed, they are more resilient



Engaging young people on monitoring and advocacy to reduce air pollution.



Increase ground level air quality monitoring

# Child-centred Clean Air Solutions

## Child-Centred Clean Air Solutions:

UNICEF East Asia Pacific Regional Office and UNEP Regional Office for Asia Pacific have jointly developed this guide to promote **20 child-centred clean air solutions** and ultimately help realize children's fundamental rights to breath clean air and live in a stable climate



<https://www.unicef.org/eap/reports/child-centred-clean-air-solutions>





## UNICEF Mongolia's Sustainable Response

- Low carbon/renewable technologies for heating in kindergarten and schools (building retrofitting, ground source heat pumps)
- Improve IAQ monitoring and ventilation system in health care centers, kindergartens and school
- CHIP scaling up through sustainable supply chain and innovative finance
- YOUCCAN through Teen Parliament in collaboration with Parliament of Mongolia and local governments
- Climate resilient and disaster risk reduction in rural schools and dormitories

# Engaging Young People: Air Pollution tools for young people

## Let's Talk Air Pollution! Learning Module

## Air Quality, It's time to Act! Booklet

### Real life Real talk

Hi everyone!

My name is Toguldur, I'm 17 years old, and I live with my family in the capital city, Ulaanbaatar, Mongolia. 70% of the residents in the capital city live in the Ger district, which is around 220,000 households. In my opinion, the main reason behind air pollution is that throughout all the seasons, everyone burns coal, refined coal, wood, or anything material that can be burned. Obviously, all of these emit smoke into the air. I think we are being exposed to air pollution by the accumulation of all of these emissions. Based on my observation, young people in my generation including those younger than me and college students, can't seem to focus during exams or they seem forgetful during classes. I think air pollution has something to do with these issues...

I thought long and hard about how to solve this air pollution problem. Here in Mongolia solar power, hydropower station, and wind power are all sources currently being used. I think we could increase these stations and use electricity from these sources.

Since I was a baby, growing up, I've witnessed the impact of air pollution all around me. My mom has asthma and because of air pollution, her asthma has gotten worse, she coughs all the time. It is hard to see my mom so sick and this is why I wish I could do something to clear our air.

I decided to join this initiative and training called YouCAN. This is when I learned how air pollution negatively impacts our health and how to measure actual levels of air pollution in our community, like grocery stores, subdistricts, schools, and so on. We can see the readings on a device and right now the PM2.5 level is around 300, which is 12 times higher than the recommended national standard!

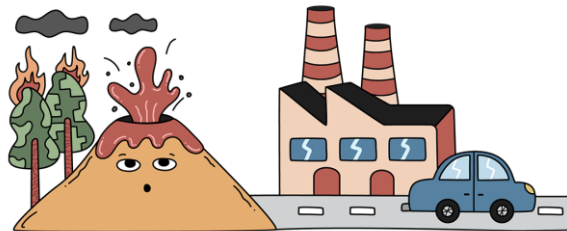
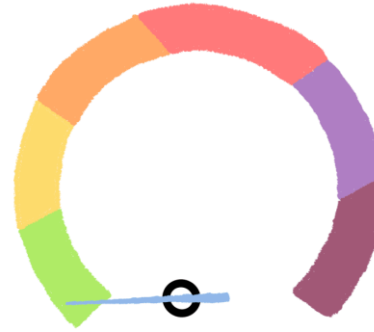
To raise awareness of this issue in our community, mostly among our friends, family, and those who are exposed to the level of air pollution, we began to share this information and other contents using social media through the YouCAN page and other popular pages.



### think about it!

There are no right or wrong answers to the questions here. There are supposed to spark conversation and ideas!

- Are there environmental laws such as the Paris Agreement specific to burning fossil fuels in your country? If so, what are they? Are there any other environmental agreements with the best and practices implemented?
- During your day, when and where do you experience the worst air quality?
- What do you believe are some of the challenges cities may face in improving air quality?
- How do you think air pollution affects young people in your country on a day-to-day basis? What about in other countries?
- Have you ever felt that air quality has changed since you were a child?
- What do you believe is the most important environmental issue today?
- Who do you think is responsible for air pollution? Individual people, governments, industries?
- What is a major world event that you've heard of in the past 6 months related to climate change or air pollution that shocks you?
- If you could choose one alternative energy source to develop, which would you choose and why?
- How do you feel energy for cooking, lighting, heating or cooling, and transport is related in your community? What do you think can be done to avoid this?
- What can you do to reduce air pollution?

# Youth engagement in Air Quality Monitoring & Advocacy

## UNICEF Mongolia's Youth for Climate and Clean Air Network – YOUCAN

- 14 Local schools and organizations participating
- 90 high school children participating in the Teen Parliament with the Parliament of Mongolia



## Youth engagement on air pollution in Vietnam

- Providing information and services- Adolescents first learned about the adverse effects of air pollution and then shared the learnings with peers.
- Awareness raising/Advocacy- Innovation hub youth led teams pitched ideas for solutions at a Clean Air Day event attended by representatives from government agencies and educational institute.
- Participation- Advocacy for installing air quality sensor was successful. Students were part of the decision-making on where to locate them; the resulting data is used in schools to engage students in air pollution management.



# Data Needs and Barriers in the Area of Public Health and Air Quality

## Health Applications

1. **Health Insurance and Reinsurance:** Determine pollution exposure risks
2. **Health and Ecological Forecasting/Monitoring:** Vector- and water-borne disease monitoring/modeling (e.g. malaria)
3. **Air Quality Rule and Regulation Making:** Determine patterns of air pollution exposure to determine impacts of regulations, areas that need greater monitoring efforts, and conduct source apportionment
4. **Estimating Air Pollution:** Determine exposure and impact on health outcomes to assess health risks
5. **Operational Air Quality Forecasting:** Air quality alerting and monitoring for extreme air quality events

# UNICEF's ideal Air Quality data needs?

**1. Access** to the data when it's needed

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**2. Guidance / steps to use the data** (video, info graphs, toolkits- (form that can be easily consumed) w/translation

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**3. Data being recent**

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# Data Needs and Barriers in the Area of Public Health and Air Quality

## Health Applications – Reactions from Colleagues...

- 1. Health Insurance and Reinsurance:** Determine pollution exposure risks
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- 3. Air Quality Rule and Regulation Making:** Determine patterns of air pollution exposure to determine impacts of regulations, areas that need greater monitoring efforts, and conduct source apportionment
- 4. Estimating Air Pollution:** Determine exposure and impact on health outcomes to assess health risks
- 5. Operational Air Quality Forecasting:** Air quality alerting and monitoring for extreme air quality events

On (2) “relates to work we do on epidemiological modelling and covid but using mostly mobility data <https://www.unicef.org/innovation/magicbox/covid>”

On (2) “Trade-offs between individual and ensemble forecasts of an emerging infectious disease- <https://www.nature.com/articles/s41467-021-25695-0>”

On (4) “NASA for monitoring AQ via Satellite – will it have direct pollutants? higher resolution? methane monitoring?”

On (4) “Impacts on health will be determined? Will these also be disaggregated?”

On (5) “We are about to start a project with the Data for Children Collaborative on “How can we produce a time series of childhood wasting estimates, accounting for climate impacts?” We might need different data sources here- which this could compliment?”



# Data Needs and Barriers in the Area of Public Health and Air Quality

## Ideas to explore collaboration

- 1. Expand the CCRI:** Expanding UNICEF's Children's Climate Risk Index (CCRI). The data could be used to expand the range of indicators within the **Air pollution component of Pillar 1** of the model and also within **Pillar 2 vulnerability components including health and WASH**. In phase II of this project, we will be applying for the Index at **subnational level** in some countries - high resolution subnational air quality data would be very useful for this
- 2. Support the development of a Child Air Quality Tracker (CAQT):** In order to obtain an improved understanding of the impact of polluted air on child health, using real-time air pollution levels, linked with health data, and forecasting models, which can lead to actionable information that can mitigate these negative impacts on children.
- 3. Others?**

# Short detour: Data Needs and Barriers in the Area of ... Water Resources?

## Water Resources

1. Hydrologic Modeling: Drought analysis/forecasting for fire weather, agriculture, and ecosystem health
2. Agricultural Modeling and Monitoring: Water resource management influencing freshwater availability
3. Hydrologic Modeling: Estimate total water fluxes at watersheds including snowmelt, snow cover, and watershed analysis for irrigation

Overall, “*ideally, we could identify hotspot countries (for a range of climate risks) where information is triangulated i.e. groundwater levels with rainfall forecasts and irrigation; to flag as an early warning - or even if not possible to triangulate with water levels; coupling risks together e.g., drought risk and rainfall forecasting; or flood levels and snowmelt in particular countries, i.e. how to connect to an existing national early warning system?*”

On (3) “*anything on transboundary water? - we had this last year with surface flows between boundaries and international agreements. Will AOS have a platform that will be easy to use and relatable?*”

# Questions

- National partners/governments that will be engaged / consulted as part of this process?
- Are there pilot countries identified / planned to involve in mission preparation?
- Plans for making the data accessible and friendly – usable by UNICEF and end-users, knowledge exchange / capacity building workshops / trainings for data users / communities that may have interest to use it (i.e., Governments, partner organisations, youth advocates etc.)?
- Additional applications to consider (i.e., for citizen science- how children and youth can use this data – e.g. with a focus on education?)
- Timing for engagement of partners? getting the word out there with other partners, considering the CCRI- and increased convergence w/conflict and multi risk assessment
- Will ground based observations be captured? Addressing any of the MAIA satellite challenges? What is the expected spatial resolution of the ground-based air quality data?





Thank you

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