

Adapting Health Systems to Protect Children from the Impact of Climate Change

Re-imagining the Package of Care for Children Subgroup December 13, 2022



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Series Objectives

- Build on the Task Force-hosted panel discussion in May 2022, dive deeply into the child health & climate change
- Raise awareness of the child health-specific health and climate change intersections
- Build capacity of Task Force members to inform climate adaptations to health plans and programs through sharing programmatic learnings
- Build consensus on ways forward and monitoring

Series Overview

Session I: Framed the series – November 10, 2022

- Shared an overview of the Healthy Environments for Healthy Children (HEHC) Framework
- Shared highlights from UNICEF heatwaves report
- Reviewed effects on health effects of heatwaves/heat stress on children
- Presented an example an intervention addressing health

Session 2: Children's Climate Risk Index (CCRI) – December 13, 2022

- Review HEHC
- Provide an overview of the CCRI methodology and its potential application

Upcoming Sessions:

- Follow-on heatwaves discussion country examples late January, TBD
- Discuss child-specific health and climate change intersections

Presenters







Swathi Manchikanti Lead for Climate Adaptation Healthy Environments for Healthy Children Programme UNICEF

for every child

Healthy Environments for Healthy Children

Swathi Manchikanti | Climate Adaptation for Health Lead UNICEF HQ, New York

The global landscape for child health is changing – we need to change our response with it





Child survival, health and wellbeing is under threat

Over **1 in 4** children under the age of 5 are dying from environmental risks





Approximately 1 billion children (nearly half of the world's children) live in extremely high-risk countries



This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers.

Note: The CCRI is composed of many indicators across climate and environmental hazards, shocks and stresses, as well as child vulnerability. **Source**: UNICEF (2021), The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index





Our economic system is driving climate change and environmental degradation



Five categories of environmental hazards Primary Health Care responsive to environmental hazards





Climate Change Adaptation: The urgency to strengthen primary health care and adapt



EXTREME WEATHER

Increased, frequency, intensity and uncertainty of extreme weather events

Floods, Cyclones, and Droughts

- Injury, death and disability
- Malnutrition, developmental delays, and mental health
- Disruption in access to essential health services, including due to migration and internal displacement



EXTREME HEAT

Increased numbers of warm days and nights; Increase in frequency and intensity of heatwaves; Increased fire risk in low rainfall conditions

Heatwaves and Wildfires

EFFECTS ON NATURAL SYSTEMS

Higher temperatures and humidity, changing and increasingly variable precipitation, higher sea surface and freshwater temperatures, sea-level rise, salinization, and coral bleaching

Vector-Born and Zoonotic Diseases, Ozone and UV Radiation Exposure

- Increased risk of preterm birth and stillbirth and adverse/abnormal outcomes for maternal and newborn health
- Health related disorders including dehydration, heat rash, heat cramps, heat oedema, heat syncope, heat exhaustion and heat stroke

- Influenced by the two effects above
- Projected to increase; will pose a heavy health burden on children
- Ground-level ozone (a key component of smog) is associated with diminished lung function, increased hospital admissions and emergency department visits for asthma, and increases in premature deaths
- Children with existing pollen allergies may have increased risk for acute respiratory effects



Healthy Environments for Healthy Children Framework



Strengthen climate-resilience and environmental sustainability in healthcare facilities

Develop responsive primary health care

Promote climate and environmental action with children, adolescents and young people

Mobilize collective action



Global Assets to Advocate for Healthy Environments for Healthy Children



The right to a healthy environment is a powerful tool to protect children from the impact of environmental degradation and climate change.

More than 1 million premature deaths among children under the age of 5 are caused by pollution and toxic substances annually.¹

Children are physically,	Children are more	Children are more at risk	Any deprivation
socially and	vulnerable	of death, compared with	caused by climate
economically more	physiologically to toxic	adults, from diseases	and environmental
vulnerable and less	substances such as	that are likely to be	degradation at
able to survive shocks from floods, droughts, severe weather and heatwaves.	lead and other forms of pollution, affecting them at even low levels of exposure.	exacerbated by pollution and climate change, such as pneumonia, malaria and diarrhoea.	a young age can result in a lifetime of lost opportunity.







YouTube Playlist

HEHC Framework



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What we need...

- Ambitious national targets to mitigate environmental degradation and climate change, and institute protections for children from impacts already occurring.
- Adequate funding to prepare and equip health systems to monitor and respond to children's environmental health issues.
- **Primary health care** (facility, community, multisectoral) that can take on these challenges
- Capacity development of health workforce to adapt skillsets and encourage adaptive preparedness efforts, including ability to work multi-sectorally and public-private to address the determinants of health
- Adoption and enforcement public health, environmental, climate and labor laws to protect children from environmental degradation and climate change



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Thank you for your time

Children's Climate Risk Index (CCRI)



The Children's Climate Risk Index (CCRI) **Global model, 2020 version**



UNICEF's 2021's Children's Climate Risk Index (CCRI) analysis and report



Very High

Medium Low Very Low

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



















Multiple and overlapping climate and environmental hazards, shocks and stresses:



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 are uniquely affected





Children's Climate & Environment Risk Index (CCRI) Global model

Objective

CCRI is a composite index that helps to understand and measure the likelihood of climate and environmental shocks or stresses leading to the erosion of development progress, the deepening of deprivation and/or humanitarian crisis affecting children or vulnerable households and groups.

It seeks to:

 Identify which countries or areas are at risk of deepening child deprivations and humanitarian situations affecting children as a result of a country's exposure to climate and environmental shocks or stresses

• Understand the underlying factors that could contribute to these risks

Risk concept

The global CCRI model builds on the risk concept adopted by UNICEF Guidance for Risk Informed Programming and INFORM Global Index for Risk Management. It balances two dimensions:

Pillar 1: Exposure to Climate and environmental shocks, hazards and stresses

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



Risk formula RISK = Average (Shock Exposure Score, Child Vulnerability)

Children's Climate & Environment Risk Index (CCRI) Global model

1. Composite index

2. Results

3. Multi-shock & multi-sectoral model

4. Interpretation of CCRI results



PILLAR 1: Exposure to climate and environmental shocks and stresses

This pillar reflects the likelihood of that the child population of a country is exposed to climate and environmental shocks or stresses





Component	Indicator		Data set	Source
Water scarcity	Children exposed to water scarcity (absolute)	✓ ✓ ✓	Drought events Water stress Seasonal variability	UNEP WRI WRI
exposure	Children exposed to water scarcity (relative)	✓ ✓	Interannual variability Groundwater table decline	WRI WRI
Riverine flood exposure	Children exposed to riverine floods - 50 years (absolute) Children exposed to riverine floods - 50 years (relative)		Riverine flood hazards, 0 years return period	GAR 2015
Coastal flood risk	Children living in areas with coastal flood risk (absolute) Children living in areas with coastal flood risk (relative)	~	Coastal flood risk (high to very high)	WRI
Tropical cyclone wind exposure	Children exposed to tropical cyclone winds - 100 years (absolute) Children exposed to tropical cyclone winds - 100 years (relative)	~	Tropical cyclone windspeed, 100 years return period (above 119 km/h and above 178 km/h)	GAR 2015
	Children at risk of Malaria (absolute)	✓	Spatial limits of <i>Plasmodium Vivax</i> Malaria transmission (stable and unstable)	The Malaria Atl
Exposure to vector borne disease	Children at risk of Malaria (relative)	✓	Spatial limits of <i>Plasmodium</i> <i>Falciparum</i> Malaria transmission (stable and unstable)	Project
	Children exposed to Zika (absolute) Children exposed to Zika (relative)	~	Environmental suitability for Zika	Messina et al.
	Children at risk of Aedes (absolute) Children at risk of Aedes (relative)	~	Probability of occurrence of Aedes	Kraemer et al.
	Children exposed to Dengue (absolute) Children exposed to Dengue (relative)	~	Environmental suitability for Dengue	Messina et al.

Component	Indicator	Data set Source	
Heatwaves	Children exposed to heatwaves (absolute) Children exposed to heatwaves (relative)	✓Annual average number of heatwaves between 2000 and 2020DataCollaborat children	ive for
Air pollution	Children exposed to outdoor fine particulate matter (absolute) Children exposed to outdoor fine particulate matter (relative)	 ✓ Exposure to ambient fine particulate matter (PM2.5) Atmospherical Atmospherical Atmos	ric on iroup
	Children living in areas with pesticide pollution risk (absolute) Children living in areas with pesticide pollution risk (relative)	✓ Pesticide risk (high to very high) Tang et al	
Soil and water pollution	Children with blood lead levels (BLL) over 5 ug/dl (absolute)	 ✓ Number of children (under 20) Pure Earth UNICEF 	١,
	Children with blood lead levels (BLL) over 5 ug/dl (relative)	e) with blood lead levels (BLL) over 5 ug/dl ✓ Percentage of total population by age group, both sexes (per 100 total population), 2019 estimate	2019
	Total population count, both sexes combined	 ✓ Gridded population of the world v4.11 (counts), UN Adjusted, CIESIN 2020 estimate 	
Common	Percentage of child population under 18, both sexes combined	 Percentage of total population by broad age group, both sexes (per 100 total population), 2020 	2019

PILLAR 2: Child vulnerability

This pillar focuses on underlying factors that make children, families and communities exposed to prone to the adverse impacts of these shocks and stresses, and on the capacities and readiness of communities and systems to withstand damaging impacts



Pillar 2

	Component	Sub-component	Sub-component	Indicator (short name)	Source
Child health and	Child health		Under-five mortality	UN Inter-agency Group for Child Mortality Estimation, through World Bank WDI	
			DTP3 access	WHO, UNICEF, through SDG	
		Immunization	MCV2 access	WHO, UNICEF, through SDG	
			PCV3 access	WHO, UNICEF, through SDG	
			Prevalence of stunting	UNICEF, WHO, World Bank: JME	
	nutrition	Child nutrition		Low-birthweight babies	UNICEF, WHO, through World Bank WDI
		Maternal health		Maternal mortality	WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division, through World Bank WDI
				Nursing and midwifery personnel density	WHO, through SDG
				Health expenditure	WHO, through World Bank WDI
			Out of Cohool	Out-of-school rate primary	UNESCO
			Out-of-School	Out-of-school rate lower secondary	UNESCO
	Education			Youth literacy rate, population 15-24 years, both sexes	UNESCO
				Education expenditure	UNESCO, through World Bank WDI

Pillar 2

Component	Sub-component	Sub-component	Indicator (short name)	Source
			Improved drinking water source (within 30 minutes)	WHO/UNICEF JMP
Water, sanitation, and hygiene		Drinking water service level	Improved drinking water source (exceeding 30 minutes)	WHO/UNICEF JMP
			Drinking water from an unprotected dug well or unprotected spring	WHO/UNICEF JMP
			Drinking water from other unprotected sources	WHO/UNICEF JMP
			Basic handwashing facilities	WHO/UNICEF JMP, through World Bank WDI
	Poverty and inequality Communication		Poverty headcount ratio	World Bank Global Poverty Working Group
			GINI Index	World Bank Development Research Group
Poverty,			Mobile cellular subscriptions	ITU, ICT, through World Bank WDI
assets, and social	assets		Electricity access	World Bank, through SDG
protection		Social Safety	Child cash benefits	ILO, through SDG
	Social	Nets (SSN)	SSN spending	World Bank ASPIRE
	protection and economic	Financial	Lacking emergency funds	World Bank Findex database
	empowerment	inclusion	Access to money services	World Bank Findex database

Methodology to construct the index

> All indicators are converted into indices using predefined minimum and maximum values for the normalization of each indicator

All sub-components and indicators within components are weighted equally applying an arithmetic or geometric average

All components within pillars 1 and 2 are weighted equally applying a geometric average in pillar 1 and an arithmetic average in pillar 2.

The final CCRI index score is a geometric average of the scores on pillar 1 and pillar 2.

Global CCRI: Results

Pillar 1: Exposure to Climate and Environmental Shocks and Stresses

Children's Climate and Environment Risk Index





Pillar 2: Child Vulnerability



Table 1:

Countries where children are most at risk

CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS		UULNER/	LD ABILITY	CHILDF CLIMAT IND	REN'S E RISK EX
1	Central African Republic	6.7	•	9.8	•	8.7	•
2	Chad	7.0	•	9.4	•	8.5	
2	Nigeria	8.8	•	8.1	•	8.5	•
4	Guinea	7.7	•	8.9	•	8.4	
4	Guinea-Bissau	6.4	•	9.5		8.4	
4	Somalia	7.0	•	9.3		8.4	
7	Niger	7.3	•	8.9		8.2	
7	South Sudan	6.8	•	9.2		8.2	
9	Democratic Republic of the Congo	7.2	•	8.6		8.0	
10	Angola	6.5		8.9		7.9	
10	Cameroon	7.8		7.9		7.9	
10	Madagascar	7.8	•	7.9		7.9	•
10	Mozambique	7.5	•	8.2		7.9	
14	Pakistan	8.7	•	6.4		7.7	•
15	Afghanistan	7.3	•	7.9	•	7.6	
15	Bangladesh	9.1	•	5.1	•	7.6	
15	Benin	7.1	•	8.1	•	7.6	•
15	Burkina Faso	7.3	•	7.8	•	7.6	•
15	Ethiopia	7.1	•	8.1	•	7.6	•
15	Sudan	6.9	•	8.2	•	7.6	
15	Тодо	7.8		7.3		7.6	

CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS		CHILD VULNERABILITY		CHILDREN'S CLIMATE RISK INDEX	
	Cate d'haries	7.0		77	-	75	
22	Cote d Ivoire	7.Z	-	7.7	-	7.0	-
22	Equatorial Guinea	0.1	-	0.9	-	7.5	-
22		0.8	-	8.1	-	7.5	-
22	Senegal	7.9	-	7.1	-	7.5	-
26	Since Lange	9.0	-	4.0	-	7.4	-
26	Sierra Leone	0.9	-	7.9	-	7.4	-
26	Temen U.S.	7.0	-	7.8	-	7.4	-
29	Halti	0.7	-	7.8	-	7.3	-
29		7.0	-	7.5	-	7.3	-
31	Entrea	5.5	-	8.3	-	7.1	-
31	Wyanmar	8.3	-	5.4	-	7.1	-
31	Philippines	8.9	-	4.0	-	7.1	-
34	Papua New Guinea	5.1	<u> </u>	8.3	•	7.0	•
35	Democratic People's Republic of Korea	8.2	•	5.0	•	6.9	•
35	Ghana	8.2	•	5.0		6.9	•
37	Gambia	6.5	•	7.1	•	6.8	•
37	Uganda	6.3	•	7.3		6.8	•
37	Viet Nam	8.8	•	3.0		6.8	•
40	China	9.0	•	2.0		6.7	
40	Lao People's Democratic Republic	7.5	•	5.8		6.7	
40	Malawi	5.7	•	7.5	•	6.7	
40	Mauritania	6.1	•	7.2		6.7	•
40	United Republic of Tanzania	6.2	•	7.2	•	6.7	•
45	Zambia	5.3	•	7.6	•	6.6	•
46	Cambodia	7.2	•	5.6	•	6.5	•
46	Indonesia	8.1	•	4.2	•	6.5	•
48	Congo	6.0		6.8		6.4	•
49	Kenya	6.2	•	6.4	•	6.3	•
50	Thailand	8.4	•	2.3	•	6.2	•
51	Burundi	4.3	•	7.4		6.1	•
51	Nepal	7.5	•	4.2	•	6.1	•

CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS		CHILD VULNERABILITY		CHILDREN'S CLIMATE RISK INDEX	
51	Zimbabwe	57	-	6.5	•	61	•
54	Guatemala	6.6		51	-	5.9	-
54	Mexico	77	-	31		5.9	-
56	Diibouti	4.3		6.9	-	5.8	-
57	Bwanda	4.5		6.7	-	5.7	-
58	Egypt	7.3	-	3	-	5.6	-
59	Honduras	6.5		4.3	-	5.5	ě
59	Venezuela (Bolivarian Republic of)	6.8	Ť	3.9	-	5.5	ĕ
61	Colombia	6.9	ě	3.4	-	5.4	ŏ
61	Ecuador	6.9	ě	3.5		5.4	Ŏ
61	Iraq	7		3.1	•	5.4	•
61	Lesotho	4		6.6	•	5.4	•
61	Malaysia	7.2	•	2.8	•	5.4	•
61	Morocco	7	•	3.3	•	5.4	•
61	Sri Lanka	7	•	3.3	•	5.4	•
61	Tajikistan	6.7	•	3.6		5.4	•
61	Uzbekistan	7.5	•	2.2		5.4	•
70	Brazil	7.3	•	2.4	•	5.3	•
70	Iran (Islamic Republic of)	7.3	•	2.3	•	5.3	•
72	Dominican Republic	6.4	•	3.7	•	5.2	•
72	Eswatini	3.4	•	6.6	•	5.2	•
72	Republic of Korea	7.3	•	1.8		5.2	•
72	Solomon Islands	4.1	•	6.1		5.2	•
72	South Africa	5.7	•	4.7		5.2	•
77	El Salvador	6.3	•	3.5		5.1	•
77	Gabon	5.4	•	4.8		5.1	•
77	Namibia	5.3	•	4.9		5.1	•
80	Bolivia (Plurinational State of)	5.5	•	4.5		5	•
80	Peru	6.4	•	3.3		5	•
80	Suriname	6.5		3.1		5	•
80	United States	7.3	•	1.3		5	•
84	Albania	6.5	•	2.5		4.8	•
84	Botswana	4.5	•	5		4.8	•
84	Guyana	6		3.3		4.8	

CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS	CHILD VULNERABILITY	CHILDREN'S CLIMATE RISK INDEX	
84	Svrian Arab Benublic	53	42	48	
88	Cuba	6.0	24	4.0	
88	Saudi Arabia	68	17	47	
90	Algeria	6.2	2.6	4.6	
90	Nicaragua	4.6	4.5	4.6	
90	Russian Federation	6.5	1.8	4.6	
90	Turkmenistan	6.5	2.0	4.6	
94	Japan	6.3	2.1	4.5	
94	Jordan	5.5	3.4	4.5	
94	Kyrgyzstan	6.2 🔴	2.2	4.5	
97	Libya	5.5 🔴	3.2 🔵	4.4	
97	Oman	6.2 🔴	1.9 🔵	4.4	
97	Turkey	5.8 🔴	2.7 🔵	4.4 🔵	
100	United Arab Emirates	6.0 🔴	2.0 🔵	4.3 🔵	
101	Mongolia	5.2 😑	3.1 🔵	4.2 🔵	
102	Argentina	5.6 🔴	2.2 🔵	4.1 🔵	
102	France	6.1 🔴	1.2 🔵	4.1 🔵	
102	Italy	5.9 🔴	1.8 🔵	4.1 🔵	
102	Kazakhstan	5.7 🔴	1.9 🔵	4.1 🔵	
102	Republic of Moldova	5.2 😑	2.7 🔵	4.1 🔵	
102	Romania	5.4 😑	2.5 🔵	4.1 🔵	
108	Chile	5.8 🔴	1.5 🔵	4.0 🔵	
109	Paraguay	4.5 😑	3.3 🔵	3.9 🔵	
109	Serbia	5.2 😑	2.2 🔵	3.9 🔵	
111	Azerbaijan	4.1 🔴	3.4 🔵	3.8 🔵	
111	Belize	4.9 😑	2.6 🔵	3.8 🔵	
111	Bhutan	4.3 🔴	3.3 🔵	3.8 🔵	
111	State of Palestine	5.1 🔴	2.3 🔵	3.8 🔵	
111	Ukraine	5.3 😑	2.0 🔵	3.8 🔵	
111	United Kingdom	5.6 🔴	1.3 🔵	3.8 🔵	
117	Armenia	4.4 😑	2.9 🔵	3.7 🔵	
117	Canada	5.4 🔴	1.5 🔵	3.7 🔵	
117	Israel	5.3 😑	1.6 🔵	3.7 🔵	
117	Spain	5.3 😑	1.7 📃	3.7	

CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS	CHILD VULNERABILITY	CHILDREN'S CLIMATE RISK INDEX	
121	Australia	5.4 🔴	1.2	3.6	
121	Bulgaria	4.1 🔴	3.0 🔵	3.6	
121	Lebanon	4.4 😑	2.7	3.6	
121	Panama	3.7 🥚	3.4 🔵	3.6	
121	Tunisia	4.5 🔴	2.5 🔵	3.6	
126	Poland	5.0 😑	1.7 🔵	3.5	
127	North Macedonia	4.6 🔴	2.0 🔵	3.4	
128	Greece	4.7 😑	1.7 🔵	3.3 🔵	
128	Kuwait	4.6 😑	1.8 🔵	3.3 🔵	
130	Belarus	4.7 😑	1.3 🔵	3.2 🔵	
130	Croatia	4.0 😑	2.4 🔵	3.2	
130	Hungary	4.4 😑	1.8 🔵	3.2 🔵	
133	Bahrain	3.9 😑	2.3 🔵	3.1 🔵	
133	Qatar	4.1 😑	1.9 🔵	3.1 🔵	
135	Bosnia and Herzegovina	3.8 😑	2.2 🔵	3.0 🔵	
135	Portugal	4.4 😑	1.4 📃	3.0 🔵	
135	Uruguay	4.0 😑	1.9 🔵	3.0 🔵	
138	Costa Rica	3.5 😑	2.2 🔵	2.9	
138	Slovakia	3.7 😑	2.0 🔵	2.9	
140	Montenegro	3.4 🥚	1.9 🔵	2.7	
140	Netherlands	4.1 😑	1.0 🔵	2.7	
142	Georgia	2.8 🥚	2.3 🔵	2.6	
142	Germany	3.9 😑	1.1 🔵	2.6	
142	Latvia	3.3 😑	1.9 🔵	2.6	
145	Belgium	3.8 😑	0.9 🔵	2.5	
145	Cyprus	3.5 😑	1.4 📃	2.5	
147	Brunei Darussalam	2.9 🥚	1.8 🔵	2.4	
147	Czechia	3.2 🔴	1.6 🔵	2.4	
147	Denmark	3.6 🥚	0.9 🔵	2.4	
147	Lithuania	2.6 🥚	2.1 🔵	2.4	
147	Switzerland	3.3 🔴	1.3 🔵	2.4	
152	Slovenia	3.0 🥚	1.5 🔵	2.3	
153	Liechtenstein	3.3 🔴	1.0 🔵	2.2	
154	Austria	2.6 🥚	1.5 🔵	2.1	

	CCRI RANK	COUNTRY	CLIMATE AND ENVIRONMENTAL FACTORS	CHILD VULNERABILITY	CHILDREN'S CLIMATE RISK INDEX	
_	154	Ireland	2.3 😑	1.8	2.1 🔵	
	154	Malta	2.9 😑	1.2	2.1 🔵	
_	154	Norway	3.3 🔴	0.8	2.1 🔵	
	158	Sweden	2.8 😑	0.7	1.8	
	159	Estonia	2.1 🔴	1.2	1.7	
	159	Finland	2.6 😑	0.7	1.7	
_	161	New Zealand	2.4 😑	0.8	1.6	
	162	Luxembourg	1.1 📃	1.8	1.5	
_	163	Iceland	1.0 🛑	0.9	1.0	

Contextual Analysis: Overlaying CCRI with other factors

CCRI	COUNTRY	CCRI SCORE	PER CENT OF GLOBAL EMISSIONS (CO ₂)	CO ₂ EMISSIONS PER CAPITA (MT)	CUMULATIVE	
		-	(001)	(1111)		
1	Central African Republic	8.7 🔴	0.001	0.07	Cumulative	
2	Chad	8.5 🔴	0.003	0.07	Emissions: 0.55%	
2	Nigeria	8.5 🔴	0.384	0.67	of Global	
4	Guinea	8.4 🔴	0.009	0.25	Emissions	
4	Guinea-Bissau	8.4 🔴	0.001	0.17	Cumulative	
4	Somalia	8.4 🔴	0.002	0.05	502 million	
7	Niger	8.2 🔴	0.007	0.10	Curroulative	
7	South Sudan	8.2 🔴	0.004	0.13	Emissions	
9	Democratic Republic of the Congo	8.0 🌒	0.006	0.03	Per Capita: 0.4 Mt	
10	Angola	7.9 🔴	0.080	0.89	-	
10	Cameroon	7.9 🔴	0.025	0.34	_	
10	Madagascar	7.9 🔴	0.010	0.13	-	
10	Mozambique	7.9 🔴	0.020	0.23	-	

Table 3:

Top 20 countries ranked on CO₂ emissions (% of global) and corresponding CCRI rank

EMISSIONS RANK (% OF GLOBAL		PER CENT OF GLOBAL	EMISSIONS PER CAPITA		CCRI SCORE	
EMISSIONS)	COUNTRY NAME	EMISSIONS (CO ₂)	(MT)	CCRI RANK		
1	China	30.30	7.41	40	6.7	•
2	United States	14.63	15.24	80	5.0	•
3	India	7.15	1.80	26	7.4	•
4	Russian Federation	4.72	11.13	90	4.6	
5	Japan	3.25	8.74	94	4.5	•
6	Germany	2.08	8.56	142	2.6	
7	Republic of Korea	1.85	12.22	72	5.2	•
8	Iran (Islamic Republic of)	1.85	7.69	70	5.3	•
9	Indonesia	1.71	2.18	46	6.5	
10	Canada	1.69	15.50	117	3.7	
11	Saudi Arabia	1.51	15.27	88	4.7	•
12	Mexico	1.39	3.74	54	5.9	
13	South Africa	1.27	7.50	72	5.2	•
14	Brazil	1.26	2.04	70	5.3	•
15	Turkey	1.21	5.02	97	4.4	
16	Australia	1.14	15.48	121	3.6	
17	United Kingdom	1.05	5.40	111	3.8	•
18	Italy	0.95	5.38	102	4.1	•
19	Poland	0.92	8.24	126	3.5	
20	France	0.91	4.62	102	4.1	•

Source: See Methodology for CCRI data. CO₂ emissions data downloaded from World Bank WDI data catalogue, original source: Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States. Reference Year: 2018. Note: Per cent of global emissions is a calculated indicator using CO₂ emissions (thousand metric tonnes of CO₂) per country.

Table 4: Top 20 countries ranked on CO2 emissions (per capita) and corresponding CCRI rank

CO2 EMISSIONS PER CAPITA RANK (MT)	COUNTRY	CLIMATE AND ENVIRONMENTAL SHOCKS (PILLAR 1)	CHILD VULNERABILITY (PILLAR 2)	CHILDREN'S CLIMATE RISK INDEX (CCRI)	CCRI RANK	CO2 EMISSIONS PER CAPITA (MT)
1	Qatar	4.1 🔴	1.9 🔵	3.1 🕘	133	32.42
2	Kuwait	4.6 🔴	1.8 🔵	3.3 🕘	128	21.62
3	United Arab Emirates	6.0 🔴	2.0 🔵	4.3 🔵	100	20.80
4	Bahrain	3.9 🔴	2.3 🔵	3.1 🔵	133	19.59
5	Brunei Darussalam	2.9 😑	1.8 🔵	2.4 🔵	147	16.64
6	Canada	5.4 🔴	1.5 🔵	3.7 🕚	117	15.50
7	Australia	5.4 🔴	1.2 🔵	3.6 🔵	121	15.48
8	Luxembourg	1.1	1.8 🔵	1.5	162	15.33
9	Saudi Arabia	6.8 🔴	1.7 🔵	4.7 🔵	88	15.27
10	United States	7.3 🔴	1.3 🔵	5.0 🔵	80	15.24
11	Oman	6.2 🔴	1.9 🔵	4.4 🔵	97	15.19
12	Turkmenistan	6.5 🔴	2.0 🔵	4.6 🔵	90	12.26
13	Republic of Korea	7.3 🔴	1.8 🔵	5.2 🔵	72	12.22
14	Estonia	2.1 😑	1.2 🔵	1.7	159	12.10
15	Kazakhstan	5.7 🔴	1.9 🔵	4.1 🔵	102	12.06
16	Russian Federation	6.5 🔴	1.8 🔵	4.6 🔵	90	11.13
17	Czechia	3.2 😑	1.6 🔵	2.4 🔵	147	9.64
18	Libya	5.5 🔴	3.2 🔵	4.4 🔵	97	8.83
19	Netherlands	4.1 😑	1.0 🔵	2.7	140	8.77
20	Japan	6.3 🔴	2.1 🔵	4.5 🔵	94	8.74

Source: See Methodology for CCRI data. CO₂ emissions data downloaded from World Bank WDI data catalogue, original source: Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States. Reference Year: 2018. Note: Per cent of global emissions is a calculated indicator using CO₂ emissions (thousand metric tonnes of CO₂) per country. Almost all (29 out of 33) of the extremely high-risk countries are also considered fragile contexts.



Source: OECD (2020), States of Fragility 2020, OECD Publishing, Paris, https://doi.org/10.1787/ba7c22e7-en



One quarter (8 out of 33) of extremely high-risk countries have very high levels of displacement – with more than 5 per cent of the population displaced.



None of the extremely high-risk countries have a high (>80 per cent) score on the adoption and implementation of the national DRR strategies in line with the Sendai Framework.

Map 33: Sendai Framework and Adoption Implementation Score

Extremely High (0.8–1) High (0.6–0.8) Medium–High (0.4–0.6) Low–Medium (0.2–0.4) Low (0–0.2) No data

Source: SDG Indicator 1.5.3, 11.b.1, 13.1.2: Number of countries that reported having a National DRR Strategy which is aligned to the Sendai Framework



Only 40 per cent of the extremely high-risk countries have mentioned children and/or youth in the their Nationally Determined Contributions (NDCs).

Map 32: Children and/or youth in Nationally Determined Contributions (NDCs)

Children and Youth Reflected in NDCs?

Yes No No data

Source: UNICEF (2019) 'Are climate change policies child-sensitive?' by J. Pegram and C. Colon

* NDCs are being updated for COP26, and this does not reflect those updates as many are still under development. This analysis was conducted on NDCs that were available as of 2019, submitted as part of the Paris Agreement. This analysis will be updated once all updated NDCs become available.



Map 31: Financial flows on clean energy research, development and production

Financial Flows (US\$ millions constant 2017)

Extremely High (>\$400) High (\$200-\$400) Medium-High (\$100-\$200) Low-Medium (\$50-\$100) Low (\$0-\$50) No data

Source: SDG Indicator 7.a.1: International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems (millions of constant US dollars)



Next Steps: Adaptation of a subnational Children's Climate and Disaster Risk model (CCDRM) at country level

Subnational Children's Climate and Disaster Risk model (CCDRM)

PURPOSE: Strengthen risk-informed programming and planning processes through the creation of child centered evidence and the strengthening of subnational analysis of children's climate and disaster risks.

PRODUCT: Subnational CCDRM model integrated in an interactive dashboard to visualize and analyze subnational climate and disaster risks and underlying risk factors

INTEND USE:

- Support the implementation of child-centered multi-hazard risk analysis at subnational level for risk-informed programming and emergency preparedness
- Support cross-sector coordination and decision-making processes based on a common understanding of risk.
- Serve as foundation for emergency response prioritization processes.

PROCESS: The model is developed collaboratively with national partners and relevant UN agencies resulting in an open, shared risk analysis that can be used by a wide range of actors for decision-making processes

Subnational Children's Climate and Disaster Risk model (CCDRM) at country level

BASIC PRINCIPLES

- Complete coverage
- Reliable
- Open source
- Consultation process and multi-sectoral collaboration

Source: INFORM Index for Risk Management: Subnational adaptation process

Adaptation process

Review the risks covered by the global model to determine which are relevant to the country. Theoretical Decide which to keep and remove. Identify new country-specific risks to add to the model. framework Identify what indicators can be used to measure the identified risks and the best indicators Component available in the country at sub-national level. selection Work with national partners to locate relevant datasets. Collect and centralize the data from open sources. Where possible, agree process for collecting updated data in the future. **Dataset collection** Organize data into standardized admin level designations. Clean verify and scale the data. Pre-processing Combine the agreed indicators into a model according to the INFORM methodology. Building the index Produce the maps and present the results, calculations and underlying data. Review and Review and adjust the model. Model could be presented in draft version to gather more adjust feedback and make further adjustments.

Source: INFORM Index for Risk Management: Subnational adaptation process

Step 1. Developing the theoretical framework



Source: Based on the INFORM Index for Risk Management: Subnational adaptation process

Challenges

- Coverage: find subnational data
- Reference year: find recent data
- Similar indicators: use proxy indicator to describe the same topic (for missing indicators, missing values, old data)
- Imputation: use district values if the municipal value is not available

Source: INFORM Index for Risk Management: Subnational adaptation process

Calls to Action



There's still room for optimism and hope!

For example:

- Educating all children on climate change
- Scaling up proven early warning systems
- Feeding all children sustainably
- Providing a climate safety net for all children
- Becoming air-aware
- Diversifying and improvements in how we conserve water resources
- And of course young people themselves!

Calls to Action

PROTECT children from climate devastation by adapting social services.

1

PREPARE children to live in a climate-changed world.

2

3

PRIORITIZE children and young people in climate finance and resources.

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

unicef @

Thank you.

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and Brave



Climate Change and Child Health Discussion Series



Engage with the co-chairs:

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Reach out to the Child Health Task Force Secretariat: <u>childhealthtaskforce@jsi.com</u>

Subgroup information, recordings and presentations from previous webinars are available on the subgroup page of the Child Health Task Force website: <u>www.childhealthtaskforce.org/subgroups/expansion</u> Recordings, presentations and resources from the series are posted here:

https://www.childhealthtaskforce.org/events/2022/11/a dapting-health-systems-protect-children-impactclimate-change-series

Healthy Environment Healthy Children Framework:

https://www.unicef.org/media/91631/file/Healthy-Environments-for-Healthy-Children-Global-Programme-Framework-Summary.pdf

CCRI: https://www.unicef.org/reports/climate-crisis-

child-rights-crisis



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