



Child health prioritisation in national adaptation policies on climate change: a policy document analysis across 160 countries



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Integration of child-specific adaptation measures into health policies is imperative given children's heightened susceptibility to the health impacts of climate change. Using a document analysis method, we examined 160 national adaptation policies for inclusion of child-relevant measures and identified 19 child health-related adaptation domains. 44 (28%) of 160 countries' policies that were analysed failed to include any domains, 49 (31%) included at least one child-related domain, 62 (39%) included between two and six domains, and five (3%) included at least seven domains. Predominant domains among child-specific adaptation measures included education and awareness raising, followed by community engagement and nutrition. No country addressed children's direct needs in the domain of mental health. National adaptation policies tend towards overly simple conceptualisations of children across four major lenses: age, social role, gender, and agency. Limited inclusion of child-specific measures in national adaptation policies suggests insufficient recognition of and action on children's susceptibility to climate change effects.

Introduction

Children's health is especially susceptible to the effects of climate change due to their physiology, dependence on caregivers, and prolonged exposure to the effects of climate change throughout their life course.^{1,2} Direct effects on health include morbidity and mortality from extreme weather events such as flooding, drought, cold snaps, heat waves, or wildfires, whereas indirect effects include exposure to infectious diseases, air pollution, aeroallergens, poor mental health, and malnutrition resulting from water scarcity, food insecurity, and socioeconomic distress.²⁻⁴ Exposure to such stressors at

a young age negatively impacts lifelong physical and mental wellbeing.⁵

National agendas have sought to address and prioritise various climate change-related adaptation policies. The first formal National Adaptation Programmes of Action (NAPAs) were conceptualised in 2001 as part of the UN Framework Convention on Climate Change (UNFCCC); these documents were meant to foster climate action⁶ in low-resource countries. In 2010, NAPAs were expanded or replaced in several countries by National Adaptation Plans (NAPs), which outlined policies that could enhance climate resilience⁷ irrespective of a country's income status. Most recently, with support from WHO, countries began introducing Health National Adaptation Plans (HNAPs), which are policy documents that outline a country's plan to build climate-resilient health systems⁸ and to protect citizens from the health impacts of climate change.⁹

International guidance from the UN,¹⁰ UNFCCC,¹¹ WHO, and UNICEF¹² urges better integration of children's perspectives and needs into policy initiatives.^{1,13-15} This integration requires the conceptualisation of children within policy research, which remains a growing and variable field.^{16,17} Education and medicine tend to define children by their age,¹⁸ gender,^{16,17} and developmental skills,¹⁹ whereas social sciences might define children rather in relation to their sociocultural contexts^{20,21} and level of agency.^{22,23}

Currently, very little is known about the extent to which countries acknowledge children within climate change adaptation policies. To our knowledge, no research has examined the range of adaptation measures targeting child health and the nature and extent of how children are included and their needs highlighted in national climate change adaptation policies.^{7,13} Given that policies serve as crucial indicators for resource allocation at various levels (from national to local), it is

Key messages

- A substantial gap exists in the integration of child health considerations within national adaptation policies, with only a fraction of countries taking substantial steps to include child-specific measures, while a majority of countries mostly overlook or fully neglect child-related needs.
- The adaptation domains most often covered across all countries are education and awareness raising, community engagement, food safety and nutrition programmes, and disaster preparedness and response.
- There is an absence of explicit attention to children's mental health in adaptation policies, despite well documented needs in the context of climate change. Children's mental health is a crucial public health concern that requires immediate action.
- Gender inequalities and the exclusion of fathers in health policies are areas that warrant greater attention in climate change adaptation strategies.
- The recognition of children as active agents in climate change adaptation and decision-making processes is often missed while underscoring their capability and agency.

imperative to understand and adequately address child health needs in the context of climate change.²⁴

In this Health Policy, we present a matrix of countries' preparedness and inclusion of child health as it relates to climate change, highlighting both how countries integrate child health within adaptation domains and how policy documents conceptualise children.

Methods

Search strategy and selection criteria for NAPs on climate change

We sought to gather one national adaptation policy for each of the 218 countries globally, following the World Bank's definition of economies.²⁵ The term country might be used interchangeably with economy, indicating not necessarily political independence but encompassing both countries and territories.²⁵ We prioritised inclusion on the basis of the amount of health-related material—ie, beginning with HNAPs, then seeking NAPs, and finally including NAPAs if no other plans could be identified. Documents were retrieved using Google, which led us to governmental websites, UN databases, or the European Environmental Agency European Climate Adaptation Platform website.²⁶ Documents were collected from April 25 to June 30, 2022, and were included irrespective of language and publication date. The searches were run in English, French, and Spanish (appendix p 2). Throughout this Health Policy, we refer to governmental (health) national adaptation plans or programmes as national adaptation policies, as these terms are often used interchangeably.²⁷ All documents found in languages other than English were translated to English using Google Translate, including Catalan, Chinese, Croatian, Czech, French, German, Greek, Hungarian, Icelandic, Latvian, Lithuanian, Mongolian, Portuguese, Polish, Romanian, Spanish, Swedish, and Slovakian. Documents were excluded if they were irretrievable in full format or if no translation was available (appendix p 3).

Thematic analysis of adaptation measures in HNAPs

We used a combination of the Ready materials, Extract data, Analyse data, and Distil (READ) approach and thematic framework analysis supported by the qualitative data analysis software MAXQDA to analyse policies.^{28,29} We conducted a line-by-line thematic analysis of all 22 HNAPs. An adaptation measure was coded as child specific when children, related actors (eg, parent or caregiver), or child-related institutions (eg, schools) were the addressees of the intervention (figure 1). The child-related terminology was collectively defined by the three lead authors (KEZ, KH, and MA) based on text inductively identified and discussed during coding. Three domains that could indirectly improve child health were coded, even if children or related actors were not explicitly targeted, but included in the terminology of the population addressed (ie, all citizens; figure 1). Measures

that explicitly excluded children (eg, influenza vaccination for older people) were not coded.

To apply the resulting framework, KEZ, KH, and MA triple-coded five HNAPs and resolved coding disagreements by discussion. When intercoder agreement was high (minimum 85%), the remaining 17 HNAPs were double coded. The codebook was adapted during the analysis process, finalised collectively by the three lead authors, and then applied across all policy documents (appendix pp 4–6).

Descriptive analysis of emerging themes of adaptation in all document types

We used the coded segments from HNAPs to generate a comprehensive list of keywords for each adaptation measure to use when coding the remaining 138 policy documents, including NAPs and NAPAs (appendix p 4). We relied on HNAPs to devise keywords because HNAPs contain the richest health-related data. Beyond a keyword search, if any of the 138 remaining documents had a health section, it was coded line-by-line.

After identifying themes across all documents, we revisited all codes and arranged coded text from policy documents into a chart arranged by domains. We then created a country ranking, situating a country's degree of inclusion of child-specific measures relative to the country's ranking in the Children's Climate Risk Index (a composite measure of exposure to climate change relative to health system vulnerability and readiness).³⁰

Content analysis of children in the inductive themes of adaptation

During analysis, varying conceptualisations of the child emerged within and across documents, as illustrated in an inductively developed list of child-related terminology, identified during the coding process (figure 1). We analysed all coded text within HNAPs to examine conceptualisations of the child, guided by contemporary childhood theories^{18,23,31,32} and previous studies on content analyses of child health policies, which used guiding questions related to a gender-based approach (table 1).^{16,17} We applied a lens-based approach, as outlined later in this paper.

Findings

Child-specific adaptation measures in national adaptation policies

We identified 160 of 218 countries that had an adaptation policy document available, including the following types: 22 HNAPs, 119 NAPs, and 19 NAPAs. Although the majority of documents stem from middle-income countries (75 [71%] of 106), followed by high-income countries (HICs; 59 [71%] of 83), low-income countries had the highest proportion with national adaptation policy documents available (26 [90%] of 29; appendix pp 7–13). The scope of 19 adaptation themes is highlighted in figure 1. Of the 19 themes, 16 are child specific and three included measures that could indirectly benefit

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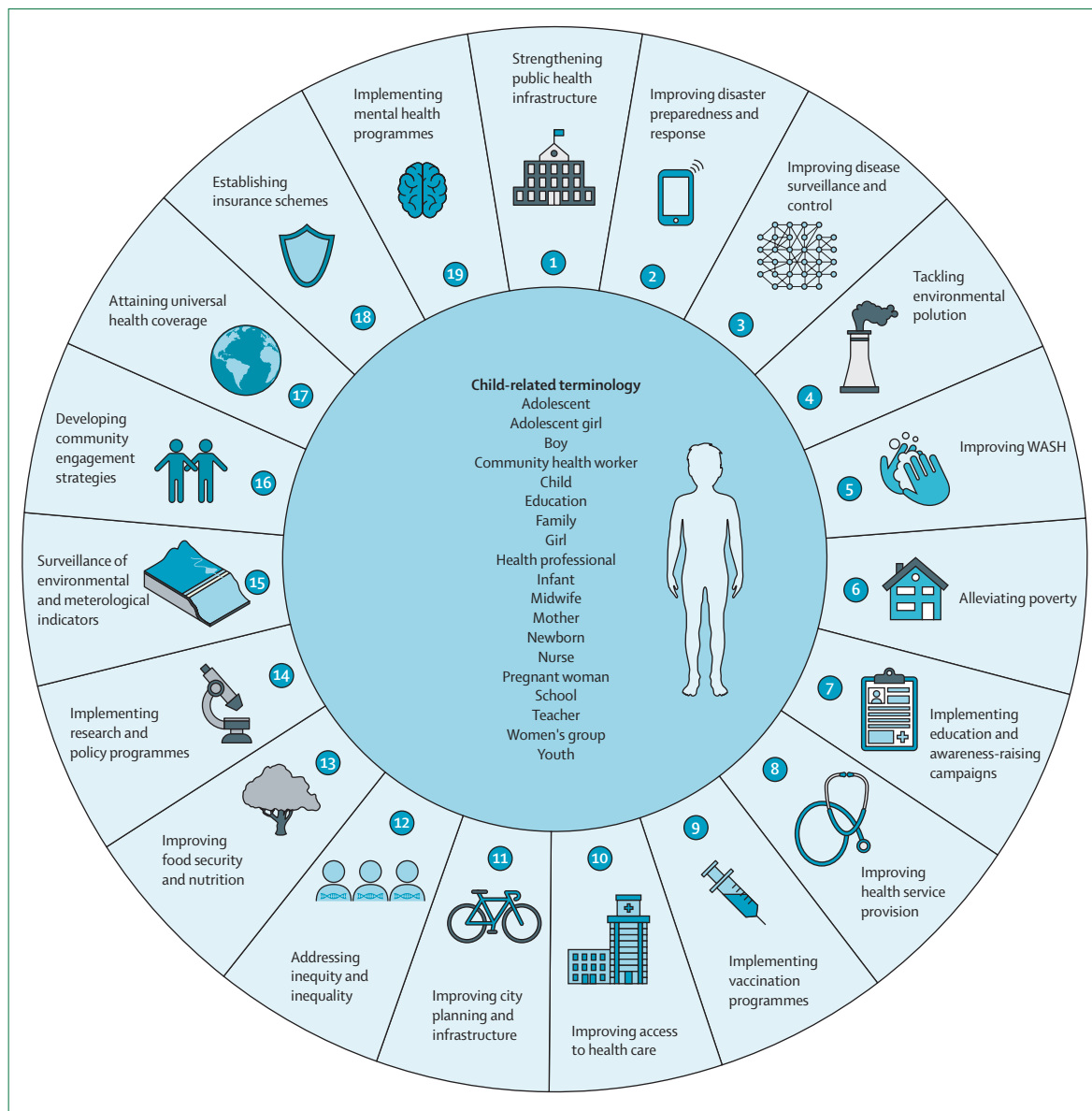


Figure 1: Inductive themes of child-health adaptation and child-related terminology
WASH=water, sanitation, and hygiene.

children (table 2). As few countries included text linking to child-specific adaptation measures (figure 2), some countries are reflected in table 2 more often than others.

The most common child-specific adaptation theme mentioned was education and awareness raising (101 [63%] of 160 countries). Beyond education, countries also mentioned community engagement (22 [14%]), food security and nutrition programmes (21 [13%]), disaster preparedness and response (20 [13%]), research and policy programmes (18 [11%]), interventions improving drinking water, sanitation, and hygiene (WASH; 17 [11%]), measures tackling inequity and inequality (15 [9%]), vaccination programmes (13 [8%]), measures

tackling environmental pollution (13 [8%]), poverty alleviation (11 [7%]), measures improving access to health care (nine [6%]), strengthening public health infrastructure (eight [5%]), health service provision (six [4%]), city planning and infrastructure (four [3%]), disease surveillance programmes (four [3%]), and surveillance of environmental indicators (one [1%]).

The adaptation themes mentioned differed by countries' income status. Prevailing child-specific adaptation measures in LMICs included strengthening public health infrastructure, tackling inequity and inequality, disease surveillance, WASH interventions, poverty alleviation, food security and nutrition, health service provision and

vaccination programmes, and improving access to health care. Child-specific measures mentioned exclusively in HICs included city planning and infrastructure along with surveillance of environmental indicators. Policies of HICs largely do not mention, or mention only to a minor extent, measures related to poverty alleviation, access to health care, or measures targeting inequity and inequality. Measures that receive similar attention regardless of country income status include disaster preparedness and response, implementation of research and policy programmes, education and awareness-raising campaigns, and measures targeting pollution.

Country performance on inclusion of child health specific adaptation themes

No country's policy presents a comprehensive view of child health as it relates to adaptation across identified domains. More than a quarter of countries (44 [28%]) had policies that included no child-specific measures. At the other end of the spectrum, fewer countries (five [3%]; ie, Austria, Jordan, Samoa, Sudan, and Timor-Leste) included text linking from seven to ten child-specific domains. Most countries (111 [69%]) mention between one and six child-specific domains.

Country performance by the inclusion of child-specific adaptation themes is presented in figure 2. Five countries were classified as high performers, 111 as moderate performers, and 44 as low performers.

The preparedness of a country—on the basis of analysing only their national adaptation policy—highlights how well countries integrate child-specific adaptation measures relative to their Children's Climate Risk Index (figures 3, 4). Sudan is the top-scoring country, having adopted a wide range of child-specific adaptation themes within their national adaptation policy. The majority of high-risk countries, however, have only one to six child-specific adaptation themes included or no child-specific adaptation measures included in terms of policy preparedness relative to their Children's Climate Risk Index.

Conceptualisation of the child in HNAPs

Lens 1: the child defined by age and developmental status

The term child or children emerges as the prevailing concept within the evaluated adaptation measures of HNAPs. Although a majority of policies tend to adopt a universal approach to addressing the needs of children, there are exceptions, notably when an adaptation measure refers to health service provision, WASH interventions, vaccination programmes, disaster preparedness and response, and education and awareness campaigns, all of which target and cater to children within specific age groups and developmental stages.

Although the definition of a child by age range is not mentioned in a single document, vaccination programmes, for example, mainly address younger children, explicitly defined as children aged 6–24 months or infants.^{38,39} Most countries that include vaccination

Background	
Lens 1: the child defined by age and developmental status	
How is the child considered in terms of age and developmental status in adaptation measures?	Defining childhood by age, developmental status, and skill is common in social science, psychology, and paediatrics due to varying characteristics related to physiology, pathophysiology, and resulting risks for disease. Identifying children using age-specific and development-specific norms at an early stage in life increases the chance of maintaining, not further exacerbating, or even improving developmental skills by providing appropriate support. ^{18,19,22,32}
Lens 2: the child within social relationships	
How are child-related measures embedded within a social context of family, community, and the medical and educational environment?	Protective factors of a social network to maintain and improve child health and wellbeing are the foundation of Bronfenbrenner's socioecological model ²¹ and were adapted in the framework of Reupert et al ²⁰ that combines the theory of it takes a village to raise a child and the socioecological model.
Lens 3: the child and the social process of their gender	
How is the gender of the child considered and constructed in adaptation measures?	Gender theories have long been based on the assumption that gender is biologically determined and a fixed binary (male or female). ³³ The contemporary discourse on gender is now led on its construction as a social process, with more than two categories. Neuropsychology and neuroscience, along with the behavioural and social neuroendocrinology sciences, favour defining gender beyond a fixed binary framework. ^{34–36}
Lens 4: the child as having been, being, and becoming	
To what extent is the child recognised as an active agent and co-creator of its environment and society in adaptation measures?	The perception of children as co-creators of their environment and active agents of change is a new development of social science theory. The legal foundations date back to 1989 when the UN Convention on the Rights of the Child ³⁷ stated that children should have the right to have a voice in matters that affect them. Children were traditionally seen as so-called <i>becomings</i> rather than <i>beings</i> , ³³ justifying their exclusion from social participation due to their perceived limitations as incomplete adults. However, contemporary social science theories of childhood emphasise the child as an independent person with the right to participate fully in social life. ^{34,38,32,31,32}

Table 1: Lenses and guiding questions informing the content analysis

programmes as an adaptation strategy use the term child or children as the target group of intervention without further defining these terms.^{38–42} Programmes to treat moderate acute malnutrition are also targeting children aged 6–59 months. This referencing of children younger than 5 years highlights homogeneity in the sense that all are younger than a particular age, but also heterogeneity in that developmental or time-bound characteristics are often highlighted, including newborns, infants, and toddlers.^{39–41,43,44} Embryos, fetuses, and newborns are indirectly acknowledged as the main target of intervention when including women of childbearing age and pregnant women, with a special emphasis on improving antenatal and perinatal care, and reproductive and family planning under the umbrella of health service provision.^{39,43,44}

The age group mainly addressed through education and awareness-raising campaigns include school-aged children and adolescents, addressed both directly and indirectly through teacher training. In addition to educational measures directly impacting children in school settings, countries such as Brazil also refer to sending out family health teams, community health agents, or home health-care teams to raise awareness and reach children who are excluded from educational institutions, hence including children at any age. Countries such as Jordan and North

	Adaptation theme and definition	Examples of measures from documents
Child-specific adaptation themes (n=16)		
1	Strengthening public health infrastructure to improve physical and intellectual infrastructure benefitting children.	Measures to strengthen public health infrastructure described increasing both laboratory and human resources, including capacity building for child-related actors (eg, Jordan, Samoa, Kiribati, and Brazil).
2	Improving disaster preparedness and response in children to help them cope with extreme weather events.	Measures ranged from basic life support and first aid to fire drills and evacuation training in schools. Disaster management plans for hospitals and health-care workers included training and simulations on delivering child health services during disasters (eg, Jordan, Madagascar, and Samoa).
3	Improving disease surveillance and control for highly prevalent childhood infectious diseases.	Measures included monitoring hygiene conditions in schools and surveillance of climate-sensitive infectious diseases that can affect children or are included in paediatric immunisation programmes (eg, influenza in Brazil and North Macedonia).
4	Tackling environmental pollution targeting child health including air, water, and soil.	Measures related to monitoring and reducing air pollution for children at high risk (eg, North Macedonia).
5	Improving WASH and increasing access for children.	Ensuring provision of clean water and sanitation facilities to rural areas, health-care settings, and schools was a common priority. WASH-specific education measures were common and included basic hygiene and communicable disease education in child-headed households and schools (eg, Samoa and Chile).
6	Alleviating poverty for child-headed households.	Measures described income-generating activities to support low-income households of vulnerable children (eg, <5 years, malnourished, or those with disabilities; Madagascar) and recognising the disproportionate impact climate change has on them (eg, South Africa).
7	Implementing education and awareness-raising campaigns of the health risks of climate change and their related adaptation measures targeting children.	Measures mostly described awareness-raising campaigns on the health impacts of climate change and on managing them, often in the form of disaster preparedness and response training. Educational campaigns targeting childhood illness exacerbated by climate change focused on air pollution and aeroallergens for individuals with asthma (eg, Ireland), infectious diseases such as diarrhoeal illnesses and meningitis after disasters (eg, South Africa), and effects from weather such as heatwaves resulting in heat-related illnesses (eg, Taiwan). Measures also included education on WASH and coping with extreme weather.
8	Improving health service provision targeted to children.	Improving health service provision often targeted nutritional supplements and programmes, immunisations, antenatal and perinatal care, family planning, and communicable disease prevention (eg, Jordan, Madagascar, Samoa, Ethiopia, and South Africa).
9	Implementing vaccination programmes for children against infectious diseases.	Measures ranged from expanding national vaccination programmes and securing an adequate supply of vaccinations (eg, Samoa, Ethiopia, and Kiribati), as well as immunisation campaigns (eg, Brazil and Jordan), particularly for influenza, rotavirus, pneumococcus, and typhoid.
10	Improving access to health care focusing on children.	Measures described outreach programmes to help vulnerable children and households use services through outreach programmes, financial aid, and by increasing proximity to health centres and services (eg, Jordan, Madagascar, and Samoa).
11	Improving city planning and infrastructure to reduce impacts of climate change on child health.	Measures focused on building climate-resilient infrastructure within schools and health-care facilities (eg, Fiji) and building infrastructure to cope with the impact of climate change. For example, outdoor shading, indoor temperature control (eg, Ireland), and climate resilient WASH facilities (eg, UK).
12	Addressing inequity and inequality measures targeting especially vulnerable groups of children.	Measures to reduce inequalities mainly described identifying vulnerable children and households, followed by targeted support schemes (eg, Samoa, Brazil, South Africa, and Philippines).
13	Improving food security and nutrition benefitting children.	Promotion of healthy nutrition for children, exclusive breastfeeding, and medical support for malnourished children were common child-specific food security and nutrition measures described (eg, Jordan, Samoa, Brazil, and Chile).
14	Implementing research and policy programmes related to climate change and health or adaptation measures targeted at or developed with children.	Measures focused on child-specific research and policies. These measures often targeted nutritional programmes and policies (eg, Samoa and Brazil).
15	Surveillance of environmental and meteorological indicators related to child health risks.	Measures focusing on surveillance included monitoring of child-related environmental risks through public health surveillance systems, such as highly prevalent lead exposure in children (eg, UK).
16	Improving community engagement with the use of groups of children or child-related actors involved in adaptation planning and implementation in their communities.	Measures that described participation of communities in the planning or implementation of a programme, mainly in the form of women's groups (eg, Samoa).

(Table 2 continues on next page)

Macedonia emphasise the involvement of family doctors or general practitioners in assuming the responsibility for addressing climate change impacts on child health.^{40,45}

In general, adaptation measures for child health are not framed with enough detail to distinguish the special

developmental characteristics and needs across different ages. In our analysis, tailored adaptation measures for children between toddlerhood and adolescence were especially low, aligning with Voss and colleagues⁴⁶ findings on global policies having little

Adaptation theme and definition	Examples of measures from documents
(Continued from previous page)	
Indirectly child-benefitting adaptation themes (n=3)	
17 Attaining universal health coverage by measures to promote universal health coverage as a concept.	Universal health coverage was an overarching measure that aimed to broadly improve the resilience of countries' health-care systems (eg, Ethiopia and Argentina).
18 Establishing insurance schemes including measures related to improving coverage of health insurance schemes or housing and livelihood insurance related to weather.	The provision or expansion of health insurance schemes to increase coverage, particularly for vulnerable populations. Specialised insurance packages for households in drought-prone or flood-prone areas (eg, Ethiopia) or climate-sensitive diseases (eg, Philippines). Helping vulnerable and low-income households to enrol in national health insurance schemes ranging from mandatory enrolment (eg, United Arab Emirates) to subsidies for insurance schemes and financial support for health-care services (eg, Philippines).
19 Implementing mental health programmes that target mental ill health or psychiatric conditions related to climate change, the fear of climate change, or the causes of climate change.	Measures included the expansion of mental health services after disasters (eg, Samoa and Ireland), general support through the provision of online services (eg, Kiribati), employing new agencies (eg, Philippines), and expanding community health programmes (eg, Samoa). Other measures included research on psychosocial effects of climate change (eg, Fiji) and the inclusion of mental health in non-communicable disease surveillance programmes measuring incidences and patterns of mental health problems related to climate change (eg, Samoa and Sweden). Developing new guidelines, including reviewing definitions of and treatments for mood disorders, and training mental health staff on the impact of climate change on mental health, were also mentioned (eg, Kiribati).

All 160 adaption policies are listed in the appendix (pp 7–13). Adaptation themes are based on the framework presented in figure 1. WASH=water, sanitation, and hygiene facilities.

Table 2: Child-specific and indirectly child-benefitting adaptation measures highlighted across 160 national adaptation policies

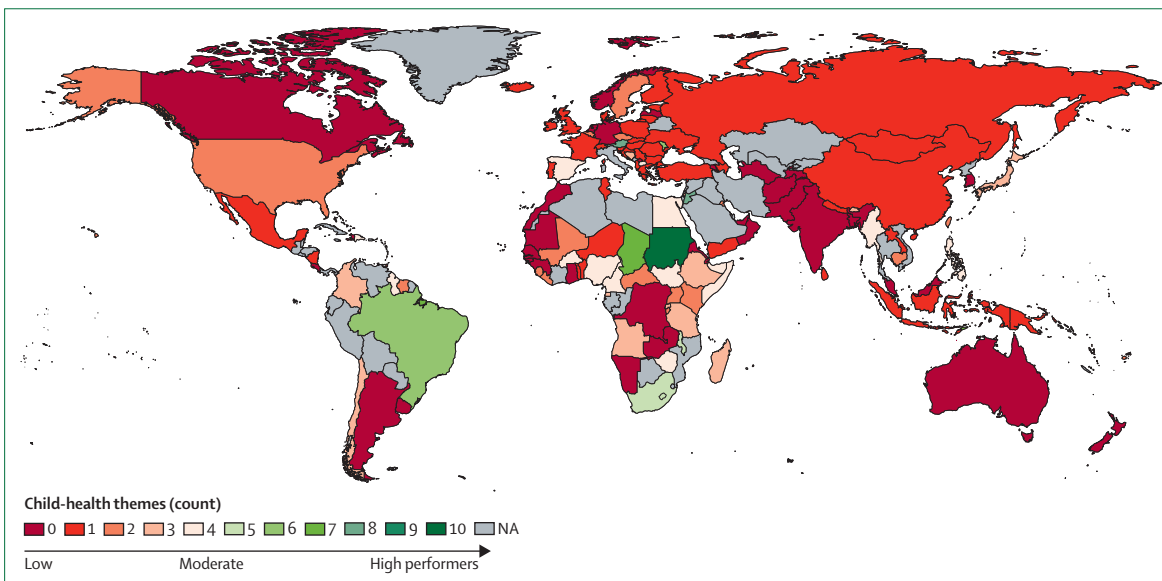


Figure 2: Inclusion of child-specific adaptation themes within 160 national adaptation policies
 Countries that were classified as high performers are coloured from dark green to green, moderate performers from light green to dark orange, and low performers are coloured dark red. Countries excluded from the analysis are coloured grey. A colour vision deficiency-friendly version of the map is also available (appendix p 14). NA=not applicable.

consideration for children in middle-childhood (aged 6–12 years).

Lens 2: the child within social relationships

By calling on health-care providers (eg, community health workers and family doctors) to raise awareness on climate-change related child health impacts, the child is indirectly addressed through the broader family (eg, mother, father, or other caregivers) or addressed directly. Mothers are frequently the target group of educational programmes on environmental health

impacts for children (ranging from overall effects on child health to healthy food choices).^{39,42} Mothers are also targeted directly for improving their own health, which includes access to preventive care and treatment, for example when pregnant.^{38,40} Fathers are not mentioned in any document, either as actors who could be involved in child health (eg, as fathers) nor as a population that could protect their own health (eg, men's health).

Community health workers and family health teams are advised to spread awareness about the impact of

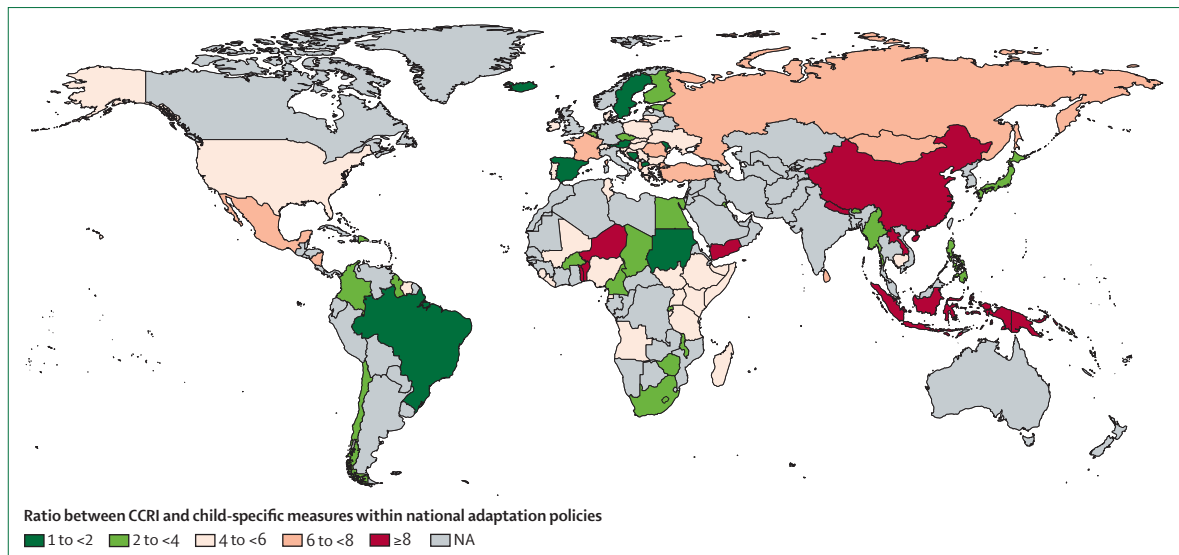


Figure 3: Climate-change and child-health policy preparedness of countries relative to their CCRI and child-specific measures within national adaptation policies
 The lower the ratio between CCRI and child-specific measures within national adaptation policies, the higher the climate-change and child-health policy preparedness of a country. CCRI=Children’s Climate Risk Index. NA=not applicable.

climate change on child health, particularly in populations that might have little or no access to formal education.³⁸ Related to children specifically, local health-care providers are described as being capable of educating children and child-headed households on basic hygiene promotion, water safety, sanitation, and water-borne, food-borne, or vector-borne diseases.^{39,47,48} Midwives, nurses, and health-care professionals are mentioned as needing training on disaster preparedness and response actions due to weather affecting maternal and child health wards, including obstetrics.^{39,40,48,49}

Beyond family members, other actors such as health professionals, local health-care providers, and teachers are described in most HNAPs as central figures to educate schoolchildren on adaptation measures, including guidance on emergency behavioural aspects during heat waves in school settings^{38,43,45,47–51} and disaster preparedness and response more generally.

Lens 3: the child and a gender binary

Two countries, Sweden and Jordan, mentioned children relative to a fixed gender binary. Sweden outlines a need to address research on the health impacts of climate change to targeting both boys and girls equally.⁵² Jordan highlights the specific needs of adolescent girls by improving health service provision under climate change scenarios that are likely to disproportionately affect girls.⁴⁰

The discourse is led with fixed binary characteristics rather than considering gender as a social process.

Lens 4: the child as having been, being, and becoming

When children are mentioned in relation to an adaptation measure, they are predominantly described with the attribution of being vulnerable. Children are portrayed

as people who need to be protected so as to thrive as responsible actors at a later point in life. Children are rarely mentioned as a target group for interventions that promote their agency or participation, with the exception of educational and awareness-raising measures in school settings.^{40,48,50} Adaptation measures are primarily embedded within the child’s social context, directed at actors related to children.

No document included a measure aiming to include children’s views, opinions, or their participation within a measure itself. Within the adaptation theme focusing on community or child participation, no document specifically considered children themselves in this capacity. Children were targeted through the inclusion of a child-related actor in this process, namely by the participation of women’s groups supporting community-level programmes.³⁹

Discussion

This study examined the depth, breadth, and nature of child health-related adaptation measures within 160 national adaptation policies. Although a small proportion of countries (n=5; 3%) integrate child health to a somewhat substantive degree within adaptation policies, with at least seven to ten child-specific adaptation

Figure 4: Country climate change and child health policy preparedness as indicated by the quantity of child-specific adaptation themes in national policies relative to their CCRI

Some regions are not shown due to missing CCRI. Bubble size reflects inclusion of child-specific domains. The larger the bubble, the higher inclusion rates of child-specific adaptation measures within a country’s national adaptation policy. Grey background marks countries with no available CCRI. CCRI=Children’s Climate Risk Index.

domains, most countries barely mentioned child-related measures (n=111; 69%) or failed to include any child-specific measures altogether (n=44; 28%). Within documents that mention children, childhood and children are typically universalised, with little mention of a specified age or age range, defined with a fixed-binary gender, conceptualised as needing protection rather than empowerment, and are not regarded as co-creators of their environment.

Major gaps and ways forward

Along with the overarching imperative to incorporate children's needs into adaptation policies globally, our study underscores specific focal points that warrant heightened attention due to their limited or absent mention in the policies. First, a general lack across a majority of countries in adequately addressing children's needs and child health within national adaptation strategies underscores an imperative for integrating child health considerations into all climate change adaptation policies. Second, the absence of child-specific mental health programmes across the policies of all 160 countries emphasises the necessity of acknowledging child mental health as a pivotal public health issue. Furthermore, our research indicates concerns that harmful gender roles are being perpetuated, and that children are not considered as active agents and co-creators in climate change adaptation policies.

Our analysis also highlights varying degrees of recognition for all other domains within national adaptation policies. Notable examples include the strengthening of health systems, the advancement of food security and nutrition, and the improvement of water, sanitation, and hygiene as specifically delineated across the 16 child-specific domains analysed. These domains constitute integral components of our recommendations aimed at enhancing child health within climate change adaptation policies, albeit not extensively discussed in further depth here.

Failure to consider children shows the need for a systematic approach

In 2020, the WHO–UNICEF–*Lancet* Commission report called for ensuring that child-related concerns are integrated into all policies by 2030¹²—a call that has been taken up by the Children in All Policies initiative, established in 2021.⁵³ Our findings reinforce the urgency of this agenda, given our strong finding of the absence or insufficient integration of child health measures in the adaptation policies of most countries, despite children's known vulnerability to the adverse effects of climate change. The 19 identified domains of our analysis could function as a foundational framework for the integration of child-specific measures into adaptation policy planning of countries. This framework would complement other initiatives in need of a child health focus.^{7,8,12,54} Such an alignment would further highlight that adaptation policies not only address direct environmental health risks

and measures (eg, theme 4, tackling environmental pollution, and theme 15, surveillance of environmental and meteorological indicators), but also aim to address underlying vulnerabilities across society (eg, theme 6, alleviation of poverty, and theme 12, addressing inequity and inequality) and the health-care system as a whole (eg, theme 8, improving health service provision, and theme 10, improving access to health care).⁸ However, evidence is notably scarce on the scope, nature, and effectiveness of child health-specific climate change adaptation domains,^{2,55,56} or predominantly centred on adult health.⁵⁷ Our findings further highlight the need for more research exploring and evaluating strategies for safeguarding children in the context of climate change. There is an ongoing discourse on developing indicators for assessing impacts and advancements in climate change adaptation, discussed in the 2023 *Lancet* Countdown on health and climate change.⁵⁸ The framework developed as part of our findings suggests that a robust health policy evaluation indicator for tracking child health within the context of adaptation policies would need to be comprehensive, covering multiple domains, to fully capture whether children's needs are being addressed.

Recognising child mental health as a crucial public health concern

One key finding of our analysis is that no country's policy addressed children's mental health, whereas it is well understood that mental health is a pervasive issue in the context of climate change.^{5,59–61} A child and adolescent mental health policy is crucial in guiding the development of such services globally.^{62,63} Despite recommendations and efforts by organisations, including WHO, countries often do not have specific mental health policies or action plans tailored to children and adolescents, with only a minority having established child and adolescent mental health policies at all.^{62–65} A review examining the integration of mental health care for mothers within maternal and child policies and programmes revealed its crucial role in enhancing health outcomes for women and their children.⁶⁶ In that case, successful policy implementation was facilitated by collaborative engagement between mental health experts and policy makers, while strategies aligned with wider development objectives, such as poverty reduction and gender empowerment, further contributed to the positive impact of improving maternal and child health.

The concept of adapting to mental health challenges is not new, as the field of disaster risk reduction has long acknowledged its significance.⁶⁷ Related to health and climate change specifically, interventions to address eco-anxiety that have shown promise yet remain untested in a trial format include carbon conversations⁶⁸ and the work that reconnects;⁶⁹ both seek to deepen social interactions and establish connections between people and the natural environment.⁶⁷ Beyond eco-anxiety interventions, a promising strategy for enhancing the

mental wellbeing of children exists in the form of social prescribing for young people, which involves link workers facilitating social engagement.^{70,71} Connections are established with peers of similar age, prioritising child-centric principles and involving children in the co-design of their therapeutic experiences.^{72,73} Notably, social prescribing has been effectively integrated into the UK's National Health Service as a means to address common mental health issues in adults;⁷⁴ the programme, which was assessed in a trial format, showed statistically significant reductions in anxiety as well as improvements in emotional wellbeing and overall quality of life among adults.⁷⁵ The expansion of social prescription initiatives among and for children also suggests positive mental health outcomes but has, to date, been evaluated only in cross-sectional studies.⁷⁶⁻⁷⁸

Perpetuating harmful gender roles: exploring gender inequalities and their effect on families

To ensure the success of adaptation initiatives in the context of climate change, it is imperative to recognise and address the role of gender and incorporate considerations into policy documents to mitigate gender-specific health consequences of climate change, which disproportionately affects girls.⁷⁹⁻⁸⁴ Studies emphasise that focusing on empowering girls and women and improving the status of women within a community through education and literacy increase the likelihood of positive health and development outcomes for children,⁸⁵⁻⁸⁸ including a significant reduction of the risk of stunting and underweight of children younger than 5 years.⁸⁹ Beyond the exclusion of girls and mothers, the exclusion of fathers in health policies, as shown in our analysis, presents a missed opportunity to engage essential household members. Although the heightened vulnerability of girls and women to environmental health risks is observed in numerous countries, there exists a gender bias in research attention, neglecting to acknowledge distinct vulnerability patterns in boys and men.⁹⁰ This oversight has been shown to disproportionately impact morbidity and mortality patterns.^{91,92}

Despite minimal research on engaging fathers or father figures in climate change adaptation, existing evidence shows a positive effect of paternal involvement on child health in general. A systematic review found that active participation of men during pregnancy in LMICs led to significant reductions in postpartum depression among mothers and improved care seeking in the postnatal period.⁹³ A cross-sectional study centred on fathers' engagement with chronically ill children highlighted connections with heightened maternal mental wellbeing and improved family dynamics.⁹⁴ Paternal engagement is further associated with numerous positive outcomes for children, such as significant improvements in early childhood development and cognition,^{95,96} positive associations of improved mental health and wellbeing,⁹⁷ and reduced rates of obesity and asthma exacerbation.⁹⁸⁻¹⁰⁰

Efforts to normalise and bolster male and paternal perspectives are reflected in, for example, the Joint Center for Political and Economic Studies' Commission on paternal involvement in pregnancy outcomes,¹⁰¹ which identified several channels to expand paternal inclusion in child health policies and programmes, such as by increasing funding for fatherhood initiatives in maternal and child health programmes, including fathers in family planning services and reproductive life planning, and improving the quality of data collected on fathers.¹⁰¹

Children as active co-creators and involving them in decision-making processes

Our analysis identified a tendency among those who draft policies to overlook children's autonomy, reflecting broader patterns within the policy space where children's opinions and values are routinely overlooked.¹ Exceptions to this oversight can be found in the field of disaster risk reduction.¹⁰² The Children's Charter for disaster risk reduction was developed in 2011, in collaboration with 600 children from 21 countries who outlined their priorities for risk reduction within national programmes.^{103,104} This child-centred approach is also reflected in efforts on behalf of non-governmental organisations,^{10,11} communities,¹⁰⁵ and research collaborations,¹² where children are regarded as agents and co-creators in climate change mitigation and adaptation efforts. Adaptation policies could incorporate child centeredness via inclusion of children themselves in policy development, such as in ideation and design-thinking exercises,^{105,106} and leveraging children's maturity, creativity, and capabilities.^{18,22,31,107} This approach not only upholds intergenerational justice but also aligns with the principle of the right of a child to participate in matters that affect them.^{30,37} The decision report of the UNFCCC's Conference of the Parties 28 emphasises the importance of recognising children and youth, and encourages parties to adopt gender-responsive methods, incorporating human rights principles, and ensuring intergenerational equity and social justice in policy planning.¹⁵

Limitations and opportunity for future research

The document search was conducted during a time-limited period in 2022 using search terms in selected languages. Documents published after these dates, or for which search terms could not capture relevant information, would have been excluded. Furthermore, although national adaptation policies are recognised as an important source of adaptation planning for countries, other policy documents that focus on specific climate change topics in more detail might also exist, such as nationally determined contributions; adaptation communications; disaster risk reduction plans; national health sector plans, policies, and strategies; or poverty reduction strategies. This Health Policy did not include documents beyond national adaptation policies.

The extent to which the outlined adaptation measures are being implemented was not within the scope of this analysis, but future research should delve into the process of policy transfer and translation across the policy cycle,¹⁰⁸ with the aim of investigating avenues for policy enhancement.

Conclusion

Existing national adaptation policies do not appear to comprehensively plan for children's health and wellbeing needs in the context of the vast challenges posed by climate change. In light of contemporary theories of childhood, recognising children as a diverse group with varying ages, genders, agencies, and social roles is essential for effective policies linking health and climate change. Advocating for a systematic approach to consider child health needs in all adaptation policies, coupled with recognition of our identified adaptation domains, has the potential to establish a foundational framework for enhancing child health and wellbeing among the challenges of climate change. Acknowledging all caregivers and children as active agents and co-creators of their environment, involving them in policy planning, and listening to their voices is equally crucial to address climate change policy development for health. Balancing protection and empowerment helps to ensure a future that is shaped with children, for children.

Contributors

All authors worked collaboratively to conceive and implement the review of health sectoral adaptation plans. All authors worked collaboratively to conceive and implement the review of national adaptation policies, and agreed with the manuscript results and conclusions. KEZ, SAM, JR, TB, IK, and MN conceptualised the Health Policy. KEZ, SAM, JR, TB, MA, and IK contributed to the methods. KEZ compiled the data. KEZ, MA, and KH analysed the data with supervision from SAM and JR. KEZ, MA, and KH wrote the first draft of the manuscript, with contributions from SAM, JR, TB, IK, MN, and SLD.

Declaration of interests

We declare no competing interests.

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