

# The benefits of a child-centred approach to climate change adaptation

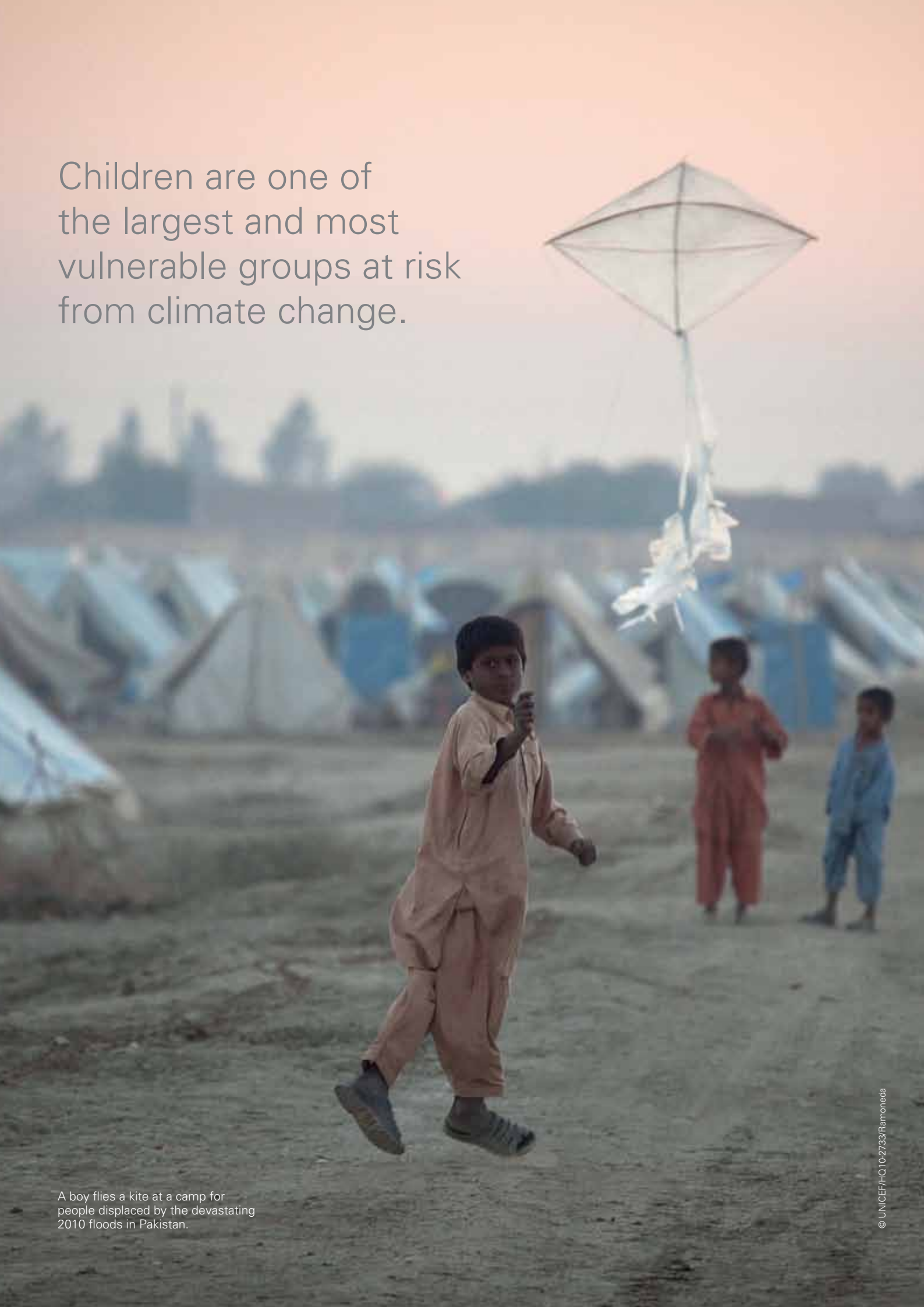
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Children are one of the largest and most vulnerable groups at risk from climate change.



A boy flies a kite at a camp for people displaced by the devastating 2010 floods in Pakistan.

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Front cover: A girl completes a maths challenge at a UNICEF-supported child-protection centre set up after the devastating 2010 floods in Pakistan. The floods affected 20 million people, half of them children.  
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This report was written for UNICEF and Plan International by Courtenay Cabot Venton

## EXECUTIVE SUMMARY

# The benefits of a child-centred approach to climate change adaptation



A girl from Gonaïves, Haiti, stands surrounded by floodwater after Hurricane Tomas. Gonaïves was also hit by a major cholera outbreak in 2010.

Climate change, and its impacts on natural and human resources, threatens to undermine human development across the globe. Developing nations, where resilience to shocks is low and livelihoods are often highly dependent on natural resources such as water and land, will be the most affected by climate change. Within these nations, children are perhaps the most vulnerable to the impact of climate change. Without concerted action, millions of children will be at increased risk from infectious disease, malnutrition, water scarcity, disasters, and the collapse of public services and infrastructure. The response to the threat of climate change thus demands a “child-centred” approach. Many of the measures that can address children’s vulnerability to climate change are already well known and are some of the lowest-cost measures available.

The aim of this paper is to present a scoping study that highlights some of the evidence in an economic argument for a child-centred approach to adaptation.

## A child-centred approach to climate change adaptation

In order to understand and measure the benefits of a child-centred approach to adaptation and disaster risk reduction, we need to understand our baseline – the current and predicted impacts of climate change under “business as usual”. Broadly speaking, the impacts of climate change on children can be usefully framed in terms of the impacts of sudden disasters, and as a result of more gradual and chronic systemic crises.

- **Sudden disasters:** In the next decade, up to 175 million children are likely to be affected every year by the kinds of natural disasters brought about by climate change.<sup>1</sup> The impacts are diverse. Children are **unable to attend school** in times of disaster and even beyond, as families send them out for work. Children are at **greater risk of injury** and suffer disproportionately from **disease** as water, sanitation and food security are threatened. The **psychological and social implications** are profound as children may be separated from parents, lose family members, be forced into early marriage, or **suffer from violence and displacement** because of disaster.
- **Chronic crises:** Changes to temperature and precipitation, because of climate change, are resulting in more systemic changes in natural processes. For example, diminishing groundwater supplies used for drinking and irrigation purposes, expansion of communicable diseases into new areas, and intensification of drought and desertification that result in food insecurity. The knock-on effects of chronic crises are wide reaching for children. In addition to **increases in mortality and morbidity through disease**, children **miss school** as they become too weak to attend, are required to help with other household activities as a coping mechanism, or find themselves having to travel further for firewood and water as resources dwindle and hence have less time for education. Children also feel the social impacts: for example, when **families are divided** because one parent has to leave for extended periods to find work to make up for losses in traditional livelihoods, or increasing **tension and conflict** over dwindling resources within families as well as wider communities.

A child-centred approach to adaptation and disaster risk reduction targets activities that help to reduce the vulnerability of children to climate change, and can include a wide range of activities: such as structural measures that protect children from disasters, training and evacuation planning for children, or insecticide treated mosquito nets to prevent the spread of malaria.

This approach can be categorised into two types: programmes that focus specifically on children’s needs – referred to in this report as “child targeted” policy and programming – and programmes that involve children in the design and delivery, referred to here as “child led” adaptation.

## The economic argument for a child-centred approach

The economic argument for investing in child-centred approaches to adaptation can be summarised as follows:

1. Children are one of the largest groups at risk from climate change. Therefore, measures that specifically target this group have the potential to reduce the impacts of climate change across a large proportion of the population, and may realise economies of scale. Importantly, child led measures develop skills across a large segment of the population and over a longer time period.
2. Children are also one of the groups most vulnerable to the effects of climate change. Therefore, the losses associated with degradation of health, education and protection caused by climate change are high. In turn, adaptation measures to protect children have the potential to offset these losses, and realise significant economic gains.
3. Many of the interventions that can reduce the vulnerability of children to climate change are some of the lowest cost options and are already well established, such as insecticide treated mosquito nets, and water, sanitation and hygiene training.

In summary, there is a strong economic argument for child-centred approaches: programmes targeted at reducing the vulnerability of children have the potential for high levels of benefit at low levels of cost.

<sup>1</sup> Save the Children, 2007. “Legacy of Disasters: The impact of climate change on children”.

Table 3.1: Analysis of economic benefits associated with child-centred adaptation

<b>Category of benefit</b>	<b>Economic impact</b>	<b>Approach to valuing benefits (per capita)</b>	<b>Additional benefit associated with child-centred approaches</b>
Health	Improved childhood survival rates and improved health	Lost years of life due to morbidity/mortality multiplied by a measure of income for a year (for example, wage rates of per capita Gross National Income) to determine the total economic loss associated with poor health/death.	Children account for a disproportionate number of lost healthy years because of the greater number of years lost through child mortality, the longer-term consequences of childhood illness and because they generally have more years ahead of them. Therefore each intervention that targets a child will result in more life years saved.
	Reduced health care costs associated with injury and illness	Reduced health care costs measured for instance in terms of the expense of a doctor's visit and medicines.	Parents often have to accompany children and therefore cost per child is higher than for an adult.  Children are more vulnerable to disease because of their developing immune system and require specialised treatment and care. Their injuries and illnesses can be more severe and long-term and therefore represent a greater avoided cost.
Education	More time at school	Number of school days lost multiplied by the value of a school day (often taken as half of the wage rate).	Education underpins children's ability to contribute to society over a lifetime, and therefore the benefits are realised over a longer period.
Protection and well-being	Reduced costs of child rehabilitation	Cost of programmes to rehabilitate children.	As with education, child protection provides gains over a lifetime.
	Reduced costs of humanitarian aid	Where adaptation has reduced the impacts of a disaster, the savings in the cost of humanitarian relief can be counted as an economic benefit, as those funds can be used for other development purposes.	Because children represent a substantial proportion of the population and because they have specialised needs, they will also account for a large percentage of the cost of humanitarian relief.

Children cook near a tent camp for people left homeless by the devastating 2010 floods in Pakistan. The camp is full and cannot accommodate them. The 2010 Pakistan floods were the worst in living memory, affecting up to 20 million people and leaving millions of children in need of immediate, life-saving assistance.



## 1 Introduction

### 1.1 Children in a changing climate

Climate change, and its impacts on natural and human resources, threatens to undermine human development across the globe. Developing nations, where resilience to shocks is low and livelihoods are often very dependent on natural resources such as water and land, will be the most affected by climate change. Within these nations, children are perhaps the most vulnerable to the impacts of climate change. Without concerted action, millions of children will be at increased risk from disease, malnutrition, water scarcity, disasters, and the collapse of public services and infrastructure.<sup>2</sup>

Chronic crises and sudden disasters related to climate change disproportionately affect children. First, children make up almost half of the population in developing countries, and hence are one of the largest groups affected by climate change. Furthermore, they are one of the groups most vulnerable to climate change. For example, due to their physical immaturity, threats such as malaria and diarrhoea, hunger and malnutrition often result in much higher levels of illness and death among

children, particularly those under the age of five. One of the most significant consequences is a loss in education – due to poor health, lack of money for school fees, and closure of schools in times of disaster. Children also face a myriad of threats to their well-being, as climate change and disasters put stress on families, force migration, and weaken the safety nets that ensure children’s protection.

The response to the threat of climate change thus demands a “child-centred” approach. Many of the measures that can address children’s vulnerability to climate change are already well known, and are some of the lowest cost measures available. The social, moral and economic arguments for investing in adaptation and disaster risk reduction that targets children are very clear and strong. However, most of the evidence to date has focused on qualitative discussions around the social and moral arguments for targeting children. The aim of this paper is to present a scoping study that highlights some of the evidence to support an economic argument for a child-centred approach to adaptation, and provides recommendations for ways to contribute further to this important and developing body of work.



A child sleeps surrounded by floodwater at his home in Khyber-Pakhtunkhwa, Pakistan. An estimated 2.5 million of the province’s 3.5 million population were affected by the 2010 disaster.

<sup>2</sup> Save the Children, 2009a.



## 2 A child-centred approach to climate change adaptation

### 2.1 Introduction

Climate variability and change are already affecting nations across the world, and threaten to undermine progress towards human development if substantive action is not taken. The direct physical impacts of climate change, including changes to temperature, precipitation, and the frequency and intensity of extreme events, are impacting on water availability, agricultural systems, and disease vectors, to name but a few. These impacts are having the greatest impact on the poorest nations, and the children within these nations are particularly vulnerable.

In order to understand and measure the benefits of a child-centred approach to adaptation and disaster risk reduction, we need to understand our baseline – the current and predicted impacts of climate change under “business as usual”. There is a large literature on the impacts of climate change on children, and this section highlights some of the key features of these effects. The section begins with an overview of the types of impacts brought about by climate change – categorised into sudden disasters and chronic crises. Next is a detailed description of the specific impacts on children in terms of changes to health, education, and well-being and protection.

### 2.2 Sudden disasters and chronic crises

Broadly speaking, the impacts of climate change on children can be usefully framed in terms of the impacts of sudden disasters and of more gradual and chronic systemic crises. Clearly, these two categories of impact do not operate in isolation – chronic changes such as eroding food security can experience sudden downturns when crops are destroyed by a flood or cyclone.

#### 2.2.1 Sudden disasters

One of the most acute impacts of climate change on children is through the effects of extreme events. Every year in the next decade, the kinds of natural disasters brought about by climate change are likely to affect up to 175 million children.<sup>3</sup> The impacts are diverse. Children are unable to attend school in disaster times and even beyond, as families send them out to work. Children are at greater risk of injury and suffer disproportionately from disease as water, sanitation and food security are threatened; and the psychological and social implications are

3 Save the Children, 2007.

high as children may be separated from parents, lose family members, forced into early marriage, or suffer from violence and displacement because of disaster.

Extreme weather events such as cyclones, floods and droughts are among the well-recognised consequences of climate change. The scale of these events is enormous. Over the last 30 years, more than 2,150 floods were recorded, claiming more than 206,000 lives and impacting some 2.6 billion people worldwide. The statistics clearly show the disproportionate vulnerability of children to climatic events.<sup>4</sup> Overall, 25 per cent of deaths in the population can be attributed to environmental factors. Among children under 14, however, the figure rises to 36 per cent.<sup>5</sup>

#### 2.2.2 Chronic crises

Shifts in temperature and precipitation because of climate change are resulting in more systemic changes in natural processes. For example, persistent drought diminishes groundwater supplies for drinking and irrigation, changes in rainfall, humidity, temperature and levels of surface water increase the penetration of disease vectors such as malaria into new areas, and intensification of floods, drought and desertification result in food insecurity.

The knock-on effects of chronic crises are wide reaching for children. In addition to increases in mortality and morbidity through disease, children miss school as they become too weak to attend, are required to help with other household activities as a coping mechanism, or find themselves having to travel further for firewood and water as resources dwindle and hence have less time for education. Children also feel the social impacts, for example as families are divided when one parent has to leave for extended periods to find wage labour to cope with losses in traditional livelihoods, and tension and conflict over scarce resources increases within families as well as wider communities.

### 2.3 The impacts of climate change on children

Both sudden disasters and chronic crises are already affecting children in multiple ways, as highlighted above, and these impacts will only intensify with climate change. The impacts on children are typically described according to the following categories: health, education, and well-being and protection. The following section describes some of the statistics

4 Prüss-Üstün, A. and C. Corvalán.

5 Ibid.

that currently exist in the literature, which help to give an idea of the scale of the problem.

### 2.3.1 Impacts of climate change on children's health

One of the biggest factors contributing to the vulnerability of children, as compared with other groups, is their susceptibility to disease. Children in the developing world are already dying on a massive scale from diseases that are preventable. Every year, more than 8 million children die before their fifth birthday<sup>6</sup> and 98 per cent of them are born in the poorest countries of the world.<sup>7</sup> These children are dying from diseases like malaria, malnutrition and diarrhoea – diseases that could be prevented or treated using relatively simple and low cost interventions such as mosquito nets, provision of clean water, and hygiene training.

Many of these diseases will occur more frequently because of climate change, posing a substantial threat to children's health, with implications for children's development, education, and participation in economic activities. Both sudden disasters and chronic crises contribute to the mortality and

morbidity of children. The impacts of climate change are already apparent – for instance, the World Health Organization (WHO) estimates that “climate change was estimated to be responsible in 2000 for approximately 2.4 per cent of worldwide diarrhoea, 6 per cent of malaria in some middle income countries and 7 per cent of dengue fever in some industrialized countries.”<sup>8</sup> The Stern Review further estimated that climate change could lead to an additional 250,000 child deaths per year.<sup>9</sup>

#### Malaria

*The impact of malaria on children:* Each year, more than 800,000 people die of malaria, of whom 85 per cent are children under the age of 5.<sup>10</sup> The vast majority of those affected are in Africa.<sup>11</sup> Malaria can contribute to death in young children in three main ways:

- an overwhelming acute infection can kill a child quickly;
- repeated infections contribute to the development of severe anaemia, which substantially increases the risk of death; and



A health worker gives water to a child being treated for cholera in Port-au-Prince, Haiti. In 2010 a series of disasters ravaged the health of Haitian children.

6 UN Inter-agency Group for child mortality estimation, 2010.

7 UNICEF, 2008c, pp 8–9.

8 WHO, 2002.

9 Stern Review on the Economics of Climate Change, 2006.

10 UN Inter-agency Group for child mortality estimation, 2010.

11 Save the Children, 2008.

- low birth weight (LBW), a frequent consequence of malaria infection in pregnancy, is the major risk factor for death in the first month of life.

In addition, repeated infections make young children more susceptible to other common childhood diseases.<sup>12</sup>

The impacts of malaria and other vector-borne diseases are a loss of education, inability to contribute to household activities and, in the extreme cases, death. The impacts affect the rest of the family, as parents and siblings spend time caring for a sick child, forcing them to abandon other household or economic activities. One study of malaria looked at historical data and suggests that the economies of countries with a high incidence of malaria grew 1.3 per cent per year less between 1965 and 1990 (after discounting other influences on growth), and that a 10 per cent reduction in malaria was associated with 0.3 per cent higher growth per year<sup>13</sup>.

*Malaria and climate change:* As temperature and precipitation patterns change, experts expect the conditions for the transmission of vector-borne diseases to expand into new areas, bringing the threat of diseases such as malaria and dengue fever to previously unaffected communities. Studies suggest that, due to climate change, the percentage of the world's population exposed to malaria will increase from 45 per cent to 60 per cent in the next 100 years.<sup>14</sup> Overall, an additional 260 million to 320 million people could be affected by malaria by 2080 because of its movement into new areas.<sup>15</sup> Climate change will also affect the transmission of other vector-borne diseases such as dengue fever – an additional 2 billion people will be at risk of dengue transmission by 2085.<sup>16</sup>

## Hunger and malnutrition

*The impact of hunger and malnutrition on children:* In 2009, around 2.7 million children under the age of five died from the effects of malnutrition<sup>17</sup>, accounting for 35 per cent of children's deaths<sup>18</sup>. Thirteen million babies are born malnourished, and these babies are eight times more likely to die than a baby with a good birth weight.<sup>19</sup> Repeated exposure to disasters – whether rapid-onset

such as floods, or slow-onset such as drought or desertification – increases the likelihood of a child becoming chronically malnourished. The long-term implications of chronic malnutrition, or stunting, have a profound effect on children's mental and physical development and these impacts are irreversible after the first two years of a child's life.<sup>20</sup> Children who survive malnutrition are more vulnerable to infection, suffer from stunted growth, and experience impaired cognitive development. In the long term, they do less well in school, earn less as adults and hence contribute less to the economy.<sup>21</sup> Furthermore, malnutrition undermines resilience, and increases the risk of populations to subsequent shocks, as they have fewer reserves to withstand the impacts.

Malnutrition in a population reduces gross domestic product (GDP) by an estimated 3–6 per cent and costs billions of dollars in terms of lost productivity and health care spending.<sup>22</sup> Globally, studies estimated that the direct cost of child hunger and malnutrition is between US\$20 billion and \$30 billion per annum.<sup>23</sup> A study of early childhood development in developing countries estimated that stunting caused by chronic malnutrition resulted in a reduction of 20 per cent in average annual earnings.<sup>24</sup>

*Malnutrition and climate change:* Food security is affected by a confluence of factors, including disasters, armed conflict, economic pressures, climate change and climate variations. Climatic changes in temperature and precipitation, as well as the impacts of extreme events such as drought and floods, are resulting in failures of many crops, introduction of new pests, and loss of water resources for irrigation. There is also an effect on livestock, as grazing lands change and deteriorate. The effect on humans is increasing levels of hunger and malnutrition. It is estimated that by 2050 there will be 25 million more malnourished children because of climate change.<sup>25</sup>

## Diarrhoea

*The impact of diarrhoea on children:* Diarrhoea, despite being easily preventable, accounted for the death of 1.2 million children under five years old in 2009.<sup>26</sup> Most cases of diarrhoea in children are caused by inadequate sanitation, poor hygiene, and

12 Mills, A. and Shillcutt, S. 2004.

13 Gallup, J. L., and Sachs, J. D., 2001.

14 Watterston, T and Lenton, S., 1997.

15 Obama, B., 2007.

16 Hales, S. et al, 2002. pp 830–834.

17 UN Inter-agency Group for child mortality estimation, 2010.

18 Save the Children, 2009b.

19 Black, R. et al., 2008, pp 243.

20 Save the Children, 2008.

21 Save the Children, 2009b.

22 Ibid.

23 Global Framework for Action, 2006.

24 Grantham-McGregor, S. et al, 2007.

25 Nelson G.C. et al, 2009.

26 UN Inter-agency Group for child mortality estimation, 2010.

unsafe drinking water.<sup>27</sup> Diarrhoea is by no means the only water-borne disease that is prevalent in low-income countries, but it is certainly one of the most deadly, and hence is the focus of this discussion.

*Diarrhoea and climate change:* Climate change will exacerbate the causes of diarrhoea through, for example, contamination of drinking water and poor hygiene because of natural disasters such as floods. An estimated 85,000 deaths due to diarrhoea are attributed to climate change.<sup>28</sup> Estimates suggest that, due primarily to the effects of climate change, cases of diarrhoea are predicted to increase by between 2 per cent and 5 per cent by 2020 in countries with a per capita income of below \$6,000.<sup>29</sup> In some parts of Africa, cases of diarrhoea could increase by as much as 10 per cent. In addition, outbreaks of water-borne diseases such as cholera will become more prevalent.<sup>30</sup>

### 2.3.2 Impacts of climate change on children's education

Education is clearly a critical component of a child's upbringing, and every child has a right to education as laid out in international standards. Yet education is one of the first activities abandoned in times of disaster or hardship.

"In the case of slower onset disasters and stresses, it is well established that when family livelihoods suffer and asset bases are eroded, children become the risk management strategy – they may be increasingly absent from school or drop out altogether to increase their role in domestic tasks or income generation."<sup>31</sup>

Emergencies often disrupt education, as schools close or become shelters for a stricken population. In addition, slower-onset changes aggravated by climate change – such as sickness, malnutrition, food insecurity, and migration – degrade children's capacity to learn. For example, UNICEF estimates that children lose 272 million school days due to diarrhoea alone.<sup>32</sup> While the International Labour Office reports that a third of refugees, asylum seekers, and internally displaced people are children of school age.<sup>33</sup> The economic impacts can be significant. A World Bank study found that increasing the number of

women with secondary education by one per cent increases a country's entire annual per capita income by an average of 0.3 per cent.<sup>34</sup>

### 2.3.3 Impacts of climate change on children's well-being and protection

Both sudden disasters and chronic crises related to climate change further affect children's well-being and protection in a myriad of ways. In the case of sudden disasters, the implications are often more acute and visible, as families are torn apart, relocated, or forced to migrate. Because of their age and dependency on others, children are particularly susceptible at times of disaster, as safety nets fail and children are often orphaned or families no longer have resources to protect children. As a result, children face heightened risks, including psychological distress, physical harm, trafficking, exploitation and gender-based violence. Women and children account for more than 75 per cent of displaced people following natural disasters.<sup>35</sup>

Many of the implications are similar with more gradual climatic changes, for example as communities migrate in search of water or land. The social implications are also high, as the stress and trauma of these events erodes confidence and undermines a sense of safety and protection.

The scale of the problem is big: every year, an estimated 1.2 million children are trafficked across borders or within countries for the purposes of exploitation, including as cheap child labour<sup>36</sup>; and around 215 million children worldwide are engaged in child labour.<sup>37</sup> While not all of these cases will be directly related to climate change and disasters, these events are an important part of the problem.

Girls are particularly vulnerable, as they are exposed to additional forms of exploitation, such as early marriage and prostitution. In developing countries, girls from the poorest households are three times as likely to get married before the age of 18 than girls from the wealthiest quintile.<sup>38</sup> And in times of drought, girls have to travel farther for fetching water, leaving them exposed to greater threat.

27 World Health Organization, 2007.

28 Save the Children, 2009a.

29 Intergovernmental Panel on Climate Change, 2007.

30 Save the Children, 2009a.

31 Polack, E., 2010.

32 UNICEF, 2010b.

33 International Labour Office, 2010.

34 Dollar & Gatti, 1999.

35 UNICEF, 2008b.

36 International Labor Organization, 2002, p.32.

37 International Labour Office, 2010.

38 UNICEF, 2010a.

## 2.4 What is a child-centred approach to adaptation?

The Intergovernmental Panel on Climate Change (IPCC) defines “adaptation” to climate change as “an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” In other words, ‘adaptation’ is any spontaneous or planned action taken to cope with the impacts of, or reduce vulnerability to, climate change. As such, adaptation represents a whole host of activities, from reducing vulnerability to disasters through early warning systems and equipping communities, to introducing alternative livelihoods that are not as dependent on natural resources or modifying agricultural practices to be better suited to a drier climate. In fact, adaptation is often “development” that specifically ensures that populations have options to respond to climate threats.

It therefore follows that a child-centred approach to adaptation targets activities that help to reduce the

vulnerability of children to climate change. A child focused or child-centred approach to adaptation can be categorised into two types: programmes that focus specifically on children’s needs, referred to in this report as “child targeted” policy and programming; and programmes that involve children in the design and delivery, referred to as “child led” adaptation.

Many of the potential solutions for reducing vulnerability of children are largely low cost and already well known. For example, if all children in high-risk countries were to sleep under an insecticide-treated net, the threat of vector-borne diseases would be substantially reduced.<sup>39</sup> Diarrhoea and cholera are easily treatable with antibiotics and low-cost oral rehydration therapy, yet millions of children lack access to these life-saving interventions. In education, abolishing school fees, providing cash transfers to poor families and introducing water, sanitation and hygiene programmes in schools are key actions known to boost school enrolment and attendance<sup>40</sup>, contributing to greater resilience to disasters and hardships.



A mother and child refugee at a UNICEF-supported feeding centre in Darfur, Sudan.

<sup>39</sup> Global Health Council, ‘Interventions in Health’, [www.globalhealth.org/child\\_health/interventions/](http://www.globalhealth.org/child_health/interventions/)

<sup>40</sup> UNICEF, 2010a.

Table 2.1 highlights just a few examples of the types of adaptation activities that might be termed as “child targeted” policy and programming, and those that are more “child led”.

It is also important to note that a child-focused approach does not necessarily have to occur at a community level. Clearly many activities take place within the community, such as school initiatives focused on disaster risk reduction, training, and first aid. However, child focused approaches can also occur at a national level in terms of strengthening policy and legislation that builds protection for children, and at an international level through integrating children’s voices into negotiations on climate change, for instance.

Table 2.1: Matrix of child targeted and child led adaptation <sup>41</sup>

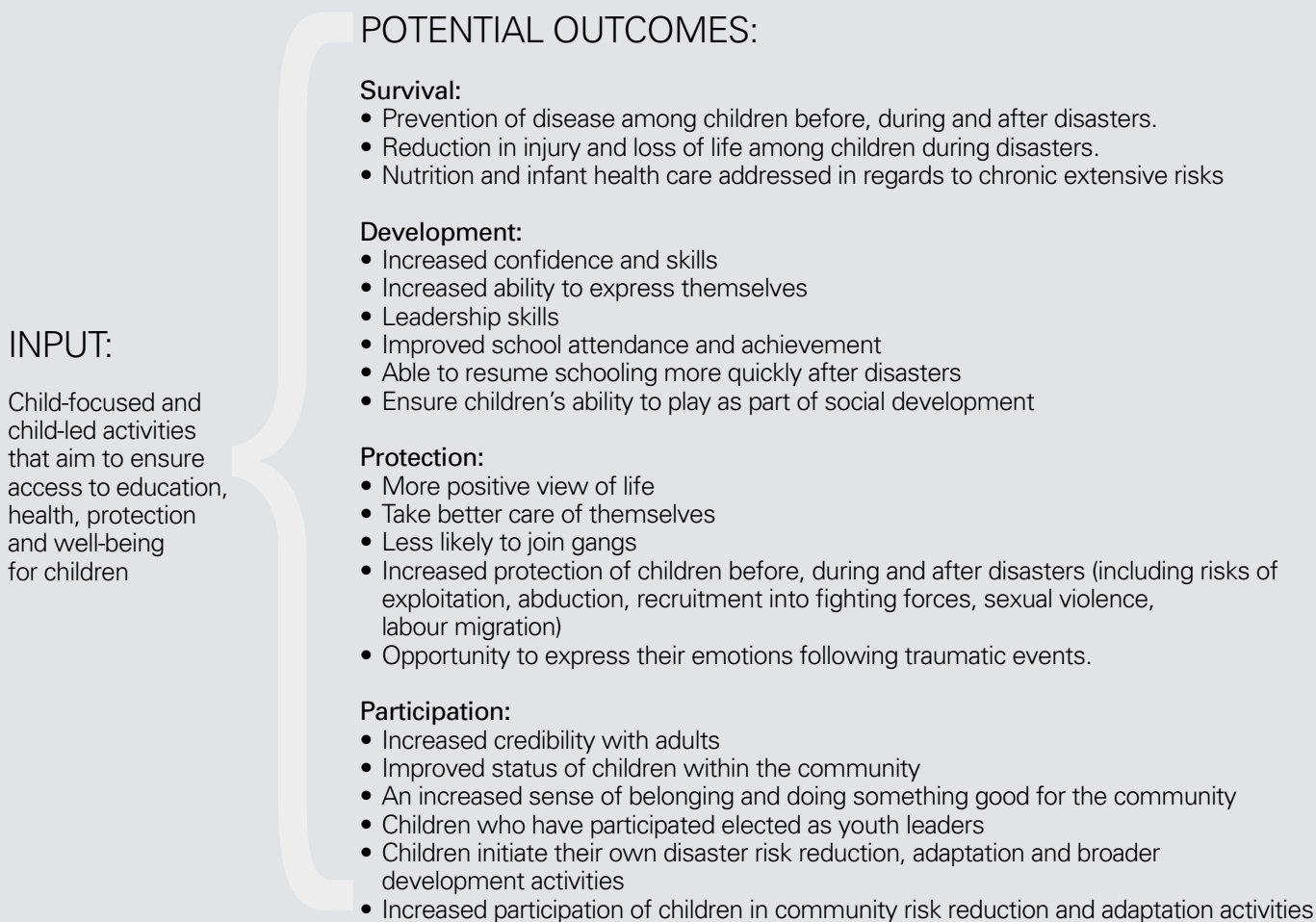
	<b>Child targeted policy and programming</b>	<b>Child led adaptation</b>
<b>Definition</b>	Policy and programming that responds to the needs of children as recipients or beneficiaries.	Participatory policy and planning where children are actively engaged in decision-making, planning and accountability processes.
<b>Types of adaptation activities. For example...</b>	<ul style="list-style-type: none"> <li>• School feeding programmes</li> <li>• Social protection/cash transfer measures</li> <li>• Structural strengthening of school buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Child-led awareness raising through multimedia</li> <li>• Disaster risk reduction programmes integrated into school curriculum, such as risk mapping and planning what to do in an emergency</li> <li>• Small scale child-led risk reduction interventions, such as tree planting, water testing and mapping.</li> </ul>

41 UNISDR, 2011 Global Assessment Report on Disaster Risk Reduction, 2011.

## 2.5 The benefits of a child-centred approach

The benefits of employing adaptation options that reduce child vulnerability are far reaching. This section provides a qualitative description of the full range of benefits associated with a child-centred approach, providing a basis for Section 3, which takes a greater focus on the economic argument.

The following diagram<sup>42</sup> uses four categories in relation to potential outcomes from children arising from a child-focused approach to both adaptation and disaster risk reduction – survival, development, protection and participation – to highlight the benefits of such an approach.



<sup>42</sup> The diagram has been adapted from Plan International, "A Children centred adaptation of the characteristics of a disaster resilient community."

### 3 The economic argument for a child-centred approach

#### 3.1 Introduction

There is clearly a social and moral argument for investing in adaptation that specifically addresses the needs of children. There is also a clear economic argument. Reducing children's vulnerability to the affects of climate change delivers economic benefits to children, their families and the wider economy and community by reducing the burden of disease, helping children to participate in family livelihoods, and increasing school enrolment. This section aims to provide a greater evidence base for the economic benefits of a child-centred approach to adaptation and disaster risk reduction, demonstrating the value that such an approach can provide, using both qualitative and quantitative evidence, to the extent that they are available.

As described previously, child-centred approaches can be divided into two categories of activity – programmes that target children and programmes that are child led. Both approaches bring benefits. However, in the case of adaptation that is child led, detailed evidence is lacking in relation to the economic benefits. Nonetheless, evidence from both approaches is used to support the economic argument presented below, to the extent possible.

#### 3.2 Summary of the economic argument for child-centred approaches

The economic argument for investing in child-focused approaches to adaptation can be summarised as follows:

1. Children make up one of the largest groups affected by climate change, and therefore measures that specifically target this group have the potential to reduce the impacts of climate change across a large proportion of the population and may realise economies of scale. Importantly, measures that are child led will develop skills across a large segment of the population.
2. Further to this, children are also one of the groups most vulnerable to climate change, and therefore the losses associated with the climate change-related impacts to their health, education and protection are high. In turn, adaptation measures to protect children have the potential to offset these losses, and realise significant economic gains.

3. Many of the interventions that can reduce the vulnerability of children to climate change are some of the lowest cost options and are already well known, such as insecticide treated mosquito nets or water, sanitation and hygiene training.

Hence, there is a strong economic argument for child-centred approaches – programmes targeted at reducing the vulnerability of children have the potential for high levels of benefit at relatively low levels of cost.

Each of these points is discussed in greater detail below, with supporting evidence where available.

#### 1. Children make up one of the largest groups at risk to climate change, and therefore measures that target this group have the potential to reduce the impacts of climate change on a large scale.

The risk of a group of people to the effects of climate change impacts can be described in two components. The first component is the exposure of a group to the impacts of climate change – for example, a particular area will be considered more at risk to climate change if it has a high population density of people exposed to that risk. According to the World Bank's World Development Indicators, nearly 40 per cent of the more than 845 million people in low-income countries in 2009 were children under the age of 15.<sup>43</sup> Save the Children further estimates that children make up approximately 50 per cent of people affected by disasters.<sup>44</sup>

Children are one of the largest groups of people affected by climate change and disasters, and future generations are set to bear the brunt of the consequences of climate change. Hence, any measures that target them as a group have the ability to foster resilience in a large portion of the population, and may realise economies of scale. Similarly, those measures that are built around child participation are drawing on a large population for effecting change.

Children's participation can be facilitated in a variety of ways. For example, the role of children in disaster risk reduction/adaptation can include:

43 <http://databank.worldbank.org/>

44 Save the Children, 2007.



- Analysers of risk and risk reduction activities;
- Designers and implementers of disaster risk reduction/adaptation at a community level;
- Communicators of risk;
- Mobilisers of resources and action;
- Constructors of social networks; and
- Monitors of progress.<sup>45</sup>

Importantly, one of the strongest economic arguments for child-led adaptation is that there may be lower costs for the inclusion of children in adaptation activities as compared with adults. For example, child led adaptation that is integrated as a part of school curriculums may have a lower unit cost, and has the ability to transmit learning and knowledge to a large proportion of the population. Box 3.4 describes a project in Tajikistan, where students learned to take water samples to test their water quality, and make community decisions on that basis. Within a short time, it was possible to generate a comprehensive map of hundreds of schools and communities where water quality was identified – an achievement that would have required considerable time and money if it were done through surveyors.

## 2. Children are one of the groups most vulnerable to the effects of climate change, and therefore adaptation measures to protect children have the potential for significant economic gains.

The second component of risk is the vulnerability of the group exposed to the effects of climate change – in other words, populations will be most at risk to the effects of climate change where exposed groups have the least resilience to these changes.

Children are clearly one of the groups most vulnerable to the effects of climate change because of their physical, cognitive and physiological immaturity. A UNICEF report highlights that children are particularly vulnerable because their physical characteristics, childhood activities and natural curiosity put them at greater risk from environmental hazards.<sup>46</sup> They are more susceptible to disease, and are more likely to die from climate related disease.

If they survive, the impacts of disease can be irreversible and have economic impacts that continue throughout life. Research findings increasingly

point to the critical imprints that childhood health, nutrition, and education leave on long-term adult mental and physical health and the ability to contribute to a sustainable society.<sup>47</sup> For example, the Copenhagen Challenge Paper on hunger and malnutrition states that “malnourished children score more poorly on tests of cognitive function, have poorer psychomotor development and fine motor skills, have lower activity levels, interact less frequently in their environments and fail to acquire skills at normal rates.”<sup>48</sup> According to the Challenge Paper on malaria, “although evidence is limited, it is likely that malaria significantly affects intellectual development and since variations in reasoning ability, cognitive skill, and years of schooling are considered to be important determinants of future variations in productivity and earnings of individuals, the economic impact is likely to be significant.”<sup>49</sup>

As a result of children being highly vulnerable, the potential losses associated with climate change and disaster impacts are high. Equally, any measures that protect children (whether this is achieved through activities that are child led or programmes that are child-focused) will offset these losses. It stands to reason that where climate change losses are high, measures that avoid those losses result in significant economic gains. In addition, these gains are likely to be realised over a longer time frame: where children are proactively involved in adaptation and disaster risk reduction activities, they carry that knowledge and learning with them for life and, because they are young, the benefits of that learning will be realised over more years than an older counterpart.

The previous section describes a range of benefits from adaptation that can be described in qualitative terms – changes in health, education, and protection and well-being. Not all of these bring economic gains, or the gains are hard to value or monetise. For example, changes to well-being such as increased confidence may result in economic gains from greater success in work in the longer term, but the causality is hard to define and the value of increased confidence difficult to quantify. Nonetheless, there are a number of specific contexts where it may be possible to derive an estimate of the economic benefit. For example, if a Disaster Risk Reduction (DRR) programme were able to reduce the number of children becoming soldiers or

47 Children in a Changing Climate, Children and Disasters: Understanding Impact and Enabling Agency, 2011.

48 Behrman, J., et al, 2004.

49 Mills, A. and Shillcutt, S., 2004.

45 Plan International, 2010.

46 UNICEF, 2008a.

prostitutes, it could be possible to value this benefit in terms of the cost avoided to rehabilitate and/or provide health care for those children.

Table 3.1 describes the key economic impacts of child-focused adaptation, the approach that could be used to value these impacts, and some of the additional economic benefits that are associated with taking an approach to adaptation that is specifically focused on benefiting children.

Table 3.1: Analysis of economic benefits associated with child-centred adaptation

Category of benefit	Economic impact	Approach to valuing benefits (per capita)	Additional benefit associated with child-centred approaches
Health	Improved rates of child mortality and morbidity	Lost years of life due to morbidity and mortality (defined as DALYs – see box below) multiplied by a measure of income for a year (for example, wage rates of per capita Gross National Income), to determine the total economic loss associated with poor health/death.	Children account for a disproportionate number of DALYs, because of the greater number of years lost through child mortality, the longer-term consequences of childhood illness, and because they generally have more years of life ahead of them. Therefore each intervention that targets a child will result in more DALYs saved.
	Reduced health care costs associated with injury and illness	Reduced health care costs measured for instance in terms of the expense of a doctor's visit and medicines.	Parents usually have to accompany children on visits to hospital or doctor and therefore avoided cost per child is higher than for an adult.  Children are more vulnerable to disease because of their developing immune system and require specialised treatment and care. Their injuries and illnesses can be more severe and long-term and therefore represent a greater avoided cost.
Education	More time at school	Number of school days lost multiplied by the value of a school day (often taken as half of the wage rate).	Education underpins children's ability to contribute to society over a lifetime, and therefore the benefits are realised over a longer period.
Protection and well-being	Reduced costs of child rehabilitation	Cost to provide programmes that rehabilitate children.	As with education, child protection brings gains over a lifetime.
	Reduced humanitarian aid costs	Where adaptation has reduced the impacts of a disaster, the savings in the cost of humanitarian relief can be counted as an economic benefit, as those funds can be used for other development purposes.	Because children represent a substantial proportion of the population, they will also account for a large proportion of the costs of humanitarian relief.



## Climate related child DALYs

The most commonly used measure of the economic loss that comes about through increased mortality and morbidity is a Disability Adjusted Life Year (DALY). This measure describes the cost of the death of a child in terms of the years of life lost. Similarly, when a child is unable to participate actively in education, work, and family life as a result of illness or disability, the measure describes the cost as years lost due to disability. The sum of these two measures is a DALY. One DALY can be thought of as one lost year of “healthy” life.

Children account for a large proportion of the total DALYs in the global burden of disease because disasters and climate change disproportionately affect children and because the loss of a child represents the loss of a lifetime of contribution to society.

The World Health Organization (WHO) classifies causes of death into three groups:

- **Group I** includes communicable, maternal, perinatal and nutritional conditions;
- **Group II** includes non-communicable diseases; and
- **Group III** includes injuries.

**In 2004, the causes of death in Group I accounted for 89 per cent of deaths to children under five.<sup>1</sup> Importantly, Group I is also the area that will experience the greatest increase as a result of climate change.**

<sup>1</sup> United Nations Population Facts, 2010.

The WHO also compiles data by age group on the DALYs that are lost in each of these categories. The data for 2004 was extrapolated to look at DALYs for children in low-income countries, and the findings help to highlight the potential impact of climate change on children – in this case through the lens of the disease burden on children. The findings not only demonstrate the disproportionate impact of the disease burden on children, but these figures will only become more pronounced as climate change exacerbates the health burden.

- Low-income countries lose approximately 1.5 billion DALYs, or years of healthy life, as a result of poor health/death.
- Within these countries, children (ages 0-14) account for 58 per cent of lost years of healthy life for all causes of death.
- Group 1 - communicable diseases and so on – contains the vast majority of health issues that will be exacerbated by climate change. Within this, children account for 78 per cent of years of lost life.
- And perhaps the most startling figure of all, the lost years of healthy life to children because of communicable diseases alone accounted for 49 per cent of the total global burden of disease in low-income countries.

Adapted from WHO (2008). “Global Burden of Disease, 2004 Summary Tables”. <http://www.who.int/evidence/bod>

### 3. Many of the interventions that can reduce the vulnerability of children to climate change are some of the least cost options and are already well known.

Clearly, there is a wide array of adaptation options that can be taken to protect populations from the effects of climate change. In some cases, the options required are high cost, for example structural measures such as building dykes and dams to protect shorelines from sea-level rise and other extreme events. However, in the case of children, many of the actions required are simple and low cost. This is true for child-targeted interventions and child-led interventions, where the evidence suggests that these programmes may be lower cost as they can be integrated with existing school projects, build on existing systems, and maximise outreach from school to the wider community, for example.

Table 3.2 below highlights a range of potential child-focused adaptation options that can help to address child vulnerability to climate change in the areas of health, education, and protection and well-being. The list is by no means exhaustive, but helps to highlight the myriad of options available. Clearly, the cost of options will be context specific – nonetheless, it is possible to make some generic assumptions regarding interventions that are typically lower cost, and these are highlighted in bold to help illustrate the point. The table is followed by several boxes that describe practical examples of the ways in which child focused adaptation interventions can be simple and low cost, but with powerful results.



Girls carry large bottles of water in a camp for people displaced by the 2010 floods in Pakistan.

Table 3.2: Examples of child-centred adaptation and disaster risk reduction interventions

Category	Examples of Child-Centred interventions
Education	<ul style="list-style-type: none"> <li>• Structural measures, for example retrofitting of schools to withstand impacts of disasters and to improve access to schools (for example, routes to school raised above flood levels)</li> <li>• Community funds targeted at school fees (see Box 3.2)</li> <li>• Integration of disaster risk reduction/adaptation activities and environmental education into school curriculum</li> <li>• Youth-led community risk mapping</li> <li>• School-based programmes such as early warning systems, gardening</li> </ul>
Health	<ul style="list-style-type: none"> <li>• Community based water management programmes, such as rainwater harvesting, chlorination</li> <li>• Improved access to health services</li> <li>• Access to anti-malarial treatment and insecticide-treated mosquito nets</li> <li>• Household water treatment</li> <li>• Training on first aid, water, sanitation and hygiene</li> <li>• Draining stagnant water</li> <li>• Improved sanitation options</li> <li>• Mapping of water sources (see Box 3.4)</li> </ul>
Protection and Well-being	<ul style="list-style-type: none"> <li>• Community projects such as clearing drains to reduce water logging, raising of embankments</li> <li>• Teaching children to swim, evacuation techniques (see Box 3.3)</li> <li>• Tree planting (see Box 3.5)</li> <li>• Advocacy training, programmes to give children and youth a voice</li> <li>• Social protection, psychological-and social support</li> <li>• Safety net interventions to help prevent dislocation and exploitation of children</li> <li>• Engaging children in raising awareness through multimedia</li> </ul>

### CASE STUDY 1: Community gardens in Niger

In Niger, community gardens ensure that children have nutritious food and a better balanced diet. Garden harvests are stored to help families survive the long off-season, and children have first call on harvested vegetables. When the gardens yield an excess, the vegetables are sold in the market, and the money deposited in a women's community bank account, which can be used to buy medicine, pay for school fees and uniforms, and buy basic staples.

Source: UNICEF, "Climate Change and Children"



## CASE STUDY 2 : Swimming and water skills in Bangladesh

Drowning is the leading cause of death among children age 1–17 in Bangladesh. Each year, approximately 17,000 children in this age group drown. Better supervision and basic swimming lessons can prevent most of these child deaths . For Bangladeshi children age 5–17, teaching them to swim is a crucial survival skill. 'Swim for Life' is a programme designed to provide life-saving swimming and water safety skills for children age 4–10.

Source: Rahman, A. et al., 'Bangladesh Health and Injury Survey Report on Children', Ministry of Health and Family Welfare, Bangladesh, Institute of Child and Mother Health, Bangladesh, UNICEF Bangladesh and The Alliance for Safe Children, Bangkok, January 2005, <[www.unicef.org/bangladesh/Bangladesh\\_Health\\_and\\_Injury\\_Survey-Report\\_on\\_Children.pdf](http://www.unicef.org/bangladesh/Bangladesh_Health_and_Injury_Survey-Report_on_Children.pdf)>. In UNICEF, "Climate Change and Children: A human security challenge." 2008.



### CASE STUDY 3 : School-based water testing in Tajikistan

Providing clean water to schools is a big challenge in Tajikistan. Diarrhoea and typhoid are prevalent because of the lack of clean water and basic sanitation. For instance, children often drink water from ditches because there is no clean drinking water. Cases of diarrhoea and typhoid are likely to increase because of climate change, and any measures that reduce their impact on the population will help to improve resilience.

In order to improve the situation, it was important to have a full picture of the conditions and quality of water in schools and communities. This was not easy, since the lack of clean water and basic sanitation is widespread, especially in rural areas. A UNICEF-initiated school-based hygiene and sanitation project accomplished extensive, reliable water testing, led by children as researchers who sought to assess the quality of water at their schools and communities on a weekly basis.

The results were interesting and useful. Within a short time, it was possible to generate a comprehensive map of the quality of water and sanitation in hundreds of schools and communities, an achievement that would have required considerable time and money if done through surveyors.

The results surprised many communities, as tests found contamination in wells thought to be safe. The child researchers became community hygiene promoters, raising awareness of the danger of drinking untreated water, introducing the practice of boiling contaminated water before use, and advocating for better sanitation facilities in and around water sources. The information was also coordinated with district health officials and became useful in making decisions on where the priorities were in bringing safe water and sanitary facilities to schools and communities.

Source: Goodman, D., *Water, Sanitation and Hygiene Education: Children and adolescents leading the way in Tajikistan*, Case Study, UNICEF New York/Tajikistan, 2005, available at <[www.unicef.org/voy/media/Tajikistan.pdf](http://www.unicef.org/voy/media/Tajikistan.pdf)>. In UNICEF, "Climate Change and Children: A human security challenge." 2008.





#### CASE STUDY 4 : Children protect mangroves in the Philippines

Teguis is one of 17 barangays (an administrative division) of Poro, a municipality of 21,500 inhabitants on Camotes island in the province of Cebu, central Philippines. The main economic activities are farming and fishing. Children in Teguis learned about the importance of protecting local ecosystems in their local disaster risk reduction group.

When children's groups in Teguis conducted their vulnerability and risk assessment exercise, one of the first things they noted was that mangrove forests were being cut down for charcoal. Mangroves are trees or shrubs that protect coastal areas from erosion, storm surges (especially during hurricanes), and tsunamis. Mangroves can absorb up to 90 per cent of the force of wind during a storm. In the aftermath of the 2004 Indian Ocean tsunami, studies revealed that mangrove forests played a crucial role in saving lives and property, yet mangroves are among the most threatened habitats worldwide. The trees shield the land from wind, and trap sediment in their roots, maintaining a shallow slope on the seabed that absorbs the energy of tidal surges. They are also one of the fastest absorbers of carbon dioxide; one tree can absorb 0.35 kilogrammes of the gas a year. Mangroves are also a great spawning ground for fish and therefore offer livelihood opportunities for local communities.<sup>1</sup>

The children of Teguis realised that the destruction of the mangroves posed a huge risk for their community. A group of 20 girls and boys decided to act by spearheading a mangrove rehabilitation campaign to restore their local ecosystem.

With support from Plan and the Teguis Farmers Association, the children's groups were able to educate others on how to protect mangroves. They shared their views at community meetings, used local media to raise awareness and distributed simple yet scientifically sound information, education and communication materials stressing the importance of offsetting the impacts of climate change by protecting the community's natural resources. They also formed teams to replant mangrove trees. In seven months, the children planted 100,000 mangrove trees covering 10 hectares of land.

The children in Teguis are an example of the important role young people can play in risk communication and promoting behavioural change to reduce disaster risks. Children's sense of responsibility to protect their future is an invaluable resource. The Children Association's President, a 15-year-old girl called Sharmaine declared, "It is very important that we do this, so that when we grow old we can say we've been a part of the movement against climate change."

Source: Plan International, 2010. "Child-centered Disaster Risk Reduction: Building resilience through participation."

<sup>1</sup> Environmental Justice Foundation, 2006, [http://www.ejfoundation.org/pdf/tsunami\\_report.pdf](http://www.ejfoundation.org/pdf/tsunami_report.pdf)



**Summary:** There is a strong economic argument for child-centred approaches to adaptation – approaches targeted at reducing the vulnerability of children have the potential for high levels of benefit offset by low levels of cost.

The evidence presented above suggests that the benefits of child-focused approaches to adaptation are likely to be high – because children are numerous and experience the impacts of climate change more acutely than other groups and over a longer period, the avoided losses associated with adaptation to both sudden disasters and systemic climate change are significant. And the literature is also clear that many of the interventions that are required to achieve these gains are low-cost, well-known activities. For example, insecticide-treated mosquito nets (ITNs) are low cost, and yet have been shown to reduce overall child mortality in children under age 5 in Sub Saharan Africa by 19 per cent.<sup>50</sup> These two arguments hold true, generally speaking, across interventions in health, education, and well-being and protection.

Clearly, the value of investing in child-focused approaches to adaptation will differ depending on the context. There is no “one size fits all” approach to adaptation, and hence measures will have different costs depending on the context in which they are used (for example, water treatment measures will likely be lower cost per capita where populations are more dense, and higher cost in more rural and dispersed areas). Similarly, the scale of analysis – whether value for money is assessed at a global, regional, national, or local level – will influence the findings. Typically, studies that investigate value for money at a community level are more evidence-based, but equally very context specific, whereas studies at a global level can provide findings that are more applicable to policy, but which are over generalized due to the wide range of assumptions that are necessary to undertake an analysis at this scale.

There are several studies in the literature that back up these findings, albeit specific to health interventions.

- 1 A study by UNICEF, summarized on page 25, examined the cost effectiveness of equity-focused approaches to health. While the study was not specific to climate change, it clearly supports the argument presented in this paper – that targeting children may be a highly cost effective strategy due to their high levels of exposure and vulnerability. The study aimed to investigate the conventional wisdom that targeting the more marginalised populations, who are harder and therefore more expensive to reach, was not as cost effective a strategy as targeting the “low hanging fruit.” Using extensive data analysis across a sample of countries, the study actually found that, due to the larger proportion of children in excluded countries, and the higher proportion of these children who die, that the benefits of providing services to these excluded populations outweighed the costs. In fact, the study concluded that it would be more cost effective and sustainable to target marginalised communities than current models. They found that an equity-focused approach is especially cost-effective in low-income, high-mortality countries. In these settings, for every additional \$1 million invested this approach averts 60 per cent more deaths than the current path.
- 2 The Copenhagen Consensus 2004 created a series of reports that convened some of the top economists to try to prioritise some of the most pressing challenges and potential solutions that were facing the world, looking at the economic arguments for investing. Three of the papers focused on the major issues that face children presented in this paper: communicable disease including malaria; hunger and malnutrition; and water and sanitation. Their key findings (see text p. 25 ) present a very powerful argument for investing in a range of measures that address these health issues - the vast majority yielded substantially higher benefits in relation to costs. While these measures were not specifically in relation to adaptation, many of them are valid adaptation responses to the threat of climate change, and hence highly applicable to this study.

<sup>50</sup> Lengeler, C., 1998, pp. 54.

## 1 Summary of UNICEF study

For a long time, the conventional wisdom has been that more lives are saved in poor countries by focusing on the 'low hanging fruit' – those most readily reached by extending proven interventions through traditional service delivery modes such as hospitals and clinics. To focus on the marginalised, though right in principle, was generally not perceived as being cost-effective. However, a review of evidence and experience conducted by UNICEF in mid-2010 suggests that this is no longer true for three reasons:

- Excluded populations within countries generally have a larger proportion of children than other groups owing to higher fertility rates. As their rates of child mortality are also often considerably higher than those of more affluent groups, their burden of child deaths constitutes a large share of the national total.

- In excluded populations, a higher proportion of children die of preventable or treatable infectious diseases or conditions than the children of other groups.
- Most excluded populations have much lower coverage levels of cost-effective interventions with a proven high impact in reducing major childhood diseases and conditions. Consequently, these populations have the greatest scope for gains in survival and development outcomes in the next five years.

Two initial results of the simulation exercise stand out. First, an equity-focused approach will accelerate progress towards the health MDGs faster than the current path. And second, it will be considerably more cost-effective and sustainable than the current path in all country typologies.

## 2 The Copenhagen Consensus 2004 project

The findings presented below are only a brief summary, and need to be viewed within the range of assumptions and caveats that underpin the analysis. Nonetheless the findings present a compelling argument for investment in child centred approaches.

Malaria interventions such as insecticide treated mosquito nets (ITNs); treatment for pregnant women with malaria to protect children from dying from complications associated with low birth weight; and a switch and improved supply of medicines used to treat malaria, were highly cost effective, with a benefit-to-cost ratio (BCR) of 27 for a package of interventions.<sup>1</sup> In other words, for every \$1 spent on malaria prevention, \$27 could be realised in avoided losses.

An analysis of strengthening basic health services suggests that "there are likely to be high returns from investing in communicable disease control, with benefit cost ratios substantially exceeding one. Taken with the currently low coverage of malaria, HIV/AIDS and basic health care programmes in large parts of the developing world, especially SSA, [the findings] suggest that communicable disease control is substantially under-resourced. Moreover, investments where health status is low will provide substantial benefits to the poorest populations of the world."<sup>2</sup>

The Copenhagen Consensus considered a wide array of interventions for mitigating hunger and malnutrition, for reducing the prevalence of low birth weight, promoting infant and child nutrition, reducing the prevalence of vitamin and mineral deficiencies, and investments in technologies for agriculture. Across the 13 interventions included, most of which specifically targeted children, all of them had a benefit-to-cost ratio greater than one, ranging from 1 (break even), to as high as 520 (iodine treatment to reduce micronutrient deficiencies).<sup>3</sup>

In relation to water and sanitation, the Copenhagen Challenge Paper estimates that the total net benefits of halving the people without access to water and sanitation by 2015, are estimated to be US\$300-400 billion. The paper concludes that "providing community-managed access to low-cost water supply and sanitation is a major opportunity to increase global welfare. This requires an integrated approach to water supply, sanitation and hygiene education. The focus should be on service delivery rather than on infrastructure – and sanitation should receive at least as much attention, and more funding, than water supply. Social marketing and micro-credit programs are key ingredients of the package. The benefits to society range from improved health, particularly a reduction in diarrhoeal diseases, and reduced loss of time engaged in gaining access to water and sanitation but particularly reduction of time lost to disease."<sup>4</sup>

1 Mills, A. and Shillcutt, S., 2004.

2 Ibid.

3 Behrman, J., et al, 2004.

4 Rijsberman, F., 2004.

Girls at a school damaged by the 2010 floods in Pakistan. The school has been repaired with UNICEF support.



## 4 Conclusions and next steps

Despite the significant implications of climate change for children, assistance has not targeted children on a scale that matches the problem. For example, a Save the Children publication<sup>51</sup> highlighted the lack of funding in relation to disasters and children. “Despite the significant impact of disasters on children’s health, nutrition, protection and education, these sectors have, to date, been consistently under-funded by donors when providing emergency assistance. For example, in the 2007 UN Consolidated Appeals, the education sector received funds to meet only 38 per cent of needs and the protection sector received just 36 per cent of requirements; these figures contrast with an average of 72 per cent funding across all sectors.<sup>52</sup> In a more thorough review of UN Appeals for the years 2000–07, education and protection requests were funded at an average of only 36 per cent and 34 per cent respectively.<sup>53</sup>”

**The findings from this scoping report suggest that there is substantial evidence that investment in child-focused adaptation responses is more than likely to be cost effective.** Clearly, these findings will differ depending on the specific context being addressed, and the adaptation measures being considered. Funding decisions will therefore need to be made on a case-by-case basis. However, **there is certainly a strong economic argument for scaling up investment to child-focused measures as an effective and long term response to climate change.**

This is becoming even more significant considering the interplay between climate change and growing trends such as urbanisation, which are increasing the potential risk for children. Recent research by UNICEF, Plan and other humanitarian agencies show that without addressing the different challenges posed by temperature and precipitation changes and extreme weather patterns, development gains will continue to be undermined, especially in the poorest communities.

At the same time, by focusing adaptation on children we are not just ensuring children are protected but that the whole community over the long term is more resilient and more self reliant. Children are not just the vulnerable in need of support, but powerful

communicators able to play a vital role in ensuring stronger communities.

The potential cost effective investment in child-focused adaptation is increasingly relevant as developed countries scale up their international climate finance contributions to developing countries. At Copenhagen, developed countries committed to raising \$100 billion a year by 2020 of ‘new and additional’ resources for developing countries for climate change – to be split equally between adaptation and mitigation needs. This increasing global focus on adaptation must prioritise children and ensure their specific vulnerabilities to climate change are reduced. The cost effectiveness of child-focused adaptation provides further justification for this argument, showing that this approach should be at the heart of discussions on international climate finance spending on adaptation.

Based on the findings of this scoping report, there are a number of gaps in the current literature. Here, further evidence would be helpful to help make the case for child-focused adaptation and to prioritise adaptation responses, and to better understand which programmes and policies are more cost effective at building resilience. This further research and programme delivery will continue to be taken forward by the Children in a Changing Climate coalition.

However until then, it is clear that there is urgency in focusing on children in adaptation policy and programmes – because of their specific vulnerabilities and because of the potential gains for the wider community in involving children. Children have unique ways of communicating, understanding risk and adapting to changing circumstances. Ensuring children are at the heart of climate change adaptation, especially in countries most vulnerable to climate change, will deliver results, helping create a generation that is more resilient to the changing world.

51 Save the Children, 2008.

52 [http://ocha.unog.ch/fts/reports/daily/ocha\\_R30\\_y2007\\_08032807.pdf](http://ocha.unog.ch/fts/reports/daily/ocha_R30_y2007_08032807.pdf)

53 Development Initiatives, Global Humanitarian Assistance 2007–2008, Available at <http://www.globalhumanitarianassistance.org/>

## Acronyms

DALY	Disability Adjusted Life Year
DRR	Disaster Risk Reduction
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
ITN	Insecticide-treated Net
LBW	Low Birth Weight
MDGs	Millennium Development Goals
WHO	World Health Organization

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