

Legacy of disasters

The impact of climate change on children



Executive summary

The evidence is clear: global warming is a fact, and it will have a dramatic impact on humankind. The likely effects of this warming – increasingly frequent and severe natural disasters, temperature extremes, a global rise in the sea levels – will be unevenly felt and will hit children in developing countries hardest of all. Yet despite political rhetoric about children being our future, the scale of the threat faced by today's children is barely acknowledged. When the danger to future generations of children is assessed, it becomes clear that the need for international action focused on children and climate change is vital.

Quick facts: climate change and children

- 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.¹
- The percentage of the world's population exposed to malaria, one of the biggest killers of children under the age of five, is expected to increase from 45 per cent to 60 per cent in the next 100 years due to climate change.²
- By 2010, there will be 50 million 'environmentally displaced people', most of whom will be women and children.³

Climate change will compound existing threats to children's health, food security, livelihoods, protection and education, and will lead to the degradation of natural resources. In the current and future landscape of increased disasters and increased vulnerability, governments, humanitarian agencies and the wider international community must back measures designed to help children and their communities prepare for and mitigate the effects of climate change. Such measures should be built into village, regional, national and international planning.

Governments must also take united, ambitious and determined action to reduce the carbon emissions responsible for climate change. As children make up approximately 50 per cent of those affected by disasters,⁴ all Disaster Risk Reduction (DRR) strategies must have an adequate assessment of children's needs and rights violations, and must involve children in the design and implementation of solutions. Not only will this decrease the specific risks children face, but it also will ensure their participation and, as a result, increase their capacity and confidence to cope with disaster. Furthermore, children are key to addressing both disaster risk reduction and climate change issues – children as leaders and activists can bring about major changes in knowledge, attitudes and practices.

Summary of recommendations:

- Rich, industrialised countries should reduce carbon emissions by 80 per cent by 2050 and agree to limit global warming to no more than two degrees Celsius through a new treaty based on the Kyoto Protocol.
- Donors should shift their funding to provide more money for Disaster Risk Reduction now, linked to existing measures to increase children's protection, access to health and education, and livelihood support for struggling families.
- Children must be actively involved in international, national and local efforts to mitigate the effects of climate change. Donor-funded disaster response should include child-centered disaster risk reduction.

Background

The 4th Assessment Report of the International Panel on Climate Change (IPCC)⁵, published in February 2007, is the most authoritative statement so far that global warming is undeniable and accelerating, and that human beings are directly responsible. According to the report, even if immediate action were taken to halt the increase of greenhouse gas emissions that cause global warming, the earth's temperature would continue to rise over the next two decades. In April 2007 the IPCC Working Group II will release a second volume of the report, outlining regional impacts of warming.

The IPCC bases predictions of temperature changes on different scenarios. The 'business as usual' scenario presents a daunting prospect for children, with temperatures predicted to rise by four degrees Celsius compared with levels recorded in the 1980s and perhaps by as much as six degrees Celsius. Less threatening scenarios predict less warming, but only if there is a shift to more sustainable and equitable international action.

Climate change will have an acute impact on riverine, coastal and island communities, as well as low-lying regions, mountain areas dependent on glaciers for water, and much of sub-Saharan Africa. Children in these communities are likely to face threats to their health, safety and their families' livelihoods. In addition, climate change threatens sustainable development, potentially deepening children's poverty and increasing their vulnerability to abuse, exploitation and displacement. Therefore, the consequences for the realisation of children's rights and securing justice for children are profound.

Furthermore, climate change will seriously affect most development programmes. In a world where already a child dies every 15 seconds from lack of access to safe water, where 40 million children are acutely malnourished, and where children in countries with poor early warning systems and inadequate risk-reduction already face high infant and child mortality, inaction is inexcusable.

The consensus on climate change

The conclusions of the IPCC are based on recorded increases in average air temperatures and ocean temperatures, widespread melting of ice sheets and snow, and rising sea levels due to the thermal expansion of the oceans. Other documented weather-related changes include variations in amounts of rain, wind patterns and temperature extremes.

The projections of the IPCC reinforce the UK's own research, outlined by Sir Nicholas Stern in the Stern Review Report on the Economics of Climate Change, which warned that an average temperature rise of three degrees Celsius could lead to severe water shortages and lower crop yields around the world, mass migration and major barriers to poverty reduction.⁶ The Stern report's core argument is that the effects of climate change will take a severe toll on the world's economy. If action to halt climate change is delayed or insufficient, according to the report, it could cost the world five to 20 per cent of global gross domestic product (GDP) annually. However, if action is taken now, the cost could be limited to about one per cent of annual global GDP.

Natural disasters

Given the overwhelming evidence that climate change will lead to more frequent and severe natural disasters, children will be increasingly exposed to floods, droughts, windstorms, and possibly earthquakes and tsunamis. (There is growing evidence that melting glaciers contribute to shifting of tectonic plates, which lead to earthquakes.)⁷ Climate change will also lead to serious, localised but intense weather-related events, many of which are unlikely to generate media attention but will take a toll on both rural and urban development.

Disasters hit epicentres of poverty the hardest, as the poorest people often live in unsafe settlements in sub-standard housing and in dangerous areas: in earthquake zones; on floodplains; on steep slopes at risk of erosion; or other areas which are prone to disaster.

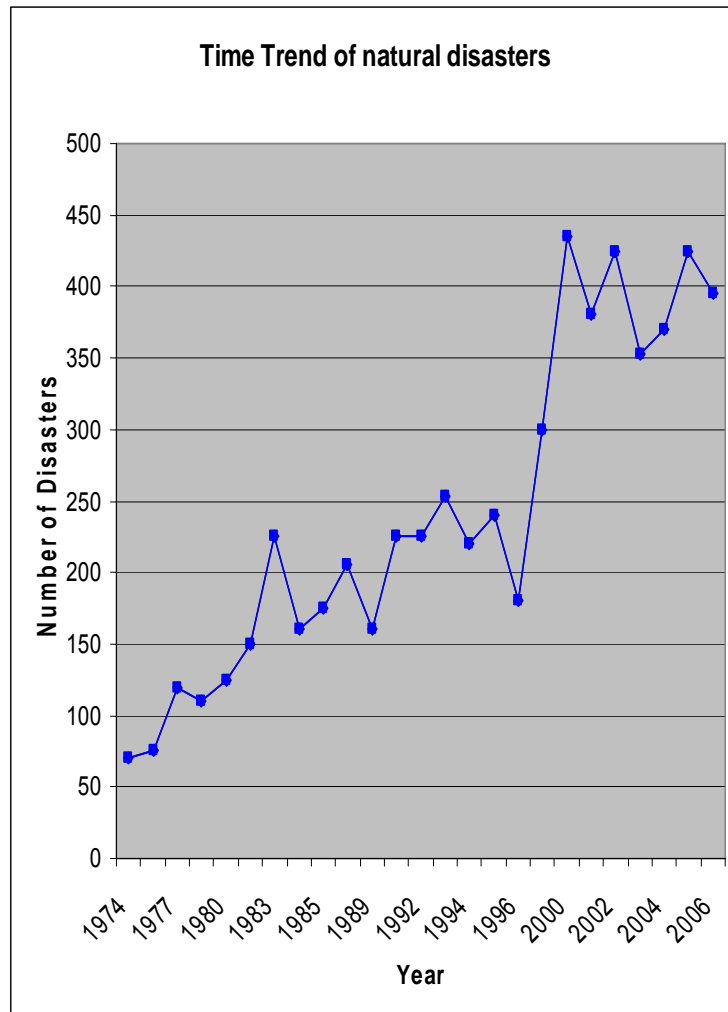
The average number of people affected by natural disasters each year is currently 250 million. That number is likely to increase -- Save the Children estimates that up to 350 million people will be affected by natural disasters per year in the next decade, and that 175 million of those affected will be children.⁸

The most dangerous continent: Asia

Increases in natural disasters related to climate change are likely to exacerbate the vulnerability of children who already live in the most disaster-prone continent: Asia. Between 1996 and 2005, over two-thirds of the people killed by natural disasters lived in Asia.⁹ The total number of people killed by natural disasters between 1996 and 2005 was 84 per cent higher than the number of people killed in the decade before. Across the world, women and children are most vulnerable in natural disasters and most likely to perish. While earthquakes may or may not be triggered by climate change, the example from the Indian Ocean tsunami in 2004 illustrates the point: of the 226,408 people killed by the tsunami¹⁰, more than half were women, and in some regions four times as many women as men were killed.¹¹ More than a third of those killed were children.¹²

While not all natural disasters are directly linked to climate change, of the total number of people affected by disasters, an overwhelming majority (98 per cent in the last decade) is affected by disasters that are influenced by climate change, such as floods or droughts.¹³

The graph on the following page shows the time trend of natural disasters between 1997 and 2006. In one year alone, the overall number of natural disasters jumped 15% from 2004 to 2005, as the result of a 50 per cent increase in floods.¹⁴



Source: EM-DAT: The OFDA-CRED, International Disaster Database

Impact on poor countries

Although climate change is a global phenomenon, the effects of global warming will be felt unevenly around the world. Countries which are least equipped to deal with climate change will be hit hardest – climate change will cause the greatest damage and most affect children in developing countries. For example, of the additional 80 million people projected to be at risk of flooding, 60 per cent are in Pakistan, India, Sri Lanka, Bangladesh and Myanmar, and 20 per cent are in Thailand, Vietnam, Indonesia and the Philippines.¹⁵

Data shows that children living in areas with poor early warning systems and inadequate risk-reduction strategies suffer disproportionately when compared with developed countries. This holds true even when a developed country is hit with many more disasters. The data below shows that in

2006 only China was hit by more natural disasters than the United States. However, when countries are ranked according to the number of people killed or affected by natural disasters, the United States does not even make the top ten.

Natural disasters per country – 2006 Victims killed and affected/100,000 inhabitants - 2006

China	35	Malawi	34,331
United States	26	Burundi	26,778
Indonesia/Philippines	20	Kenya	11,935
India	17	Philippines	9,097
Afghanistan	13	Afghanistan	7,194
Vietnam	10	China	6,793
Australia, Burundi, Pakistan	8	Somalia	5,490
Ethiopia, Mexico, Romania	7	Thailand	5,040
Germany	6	Guyana	5,462
		Vietnam	3,969

Source: EM-DAT: The OFDA-CRED International Disaster Database. For an event to qualify as a disaster according to the OFDA-CRED, at least one of the following criteria must be met: ten or more people reported killed; 100 or more people reported affected; declaration of a state of emergency; call for international assistance.

Hurricane Katrina

Hurricane Katrina, which hit New Orleans, Louisiana, in August 2005, proved that even in relatively prosperous countries, poor communities are hit hardest because they lack the resources and political support to protect their children from the worst disasters. Louisiana is one of the poorest states in the US, and Katrina, which killed over 1,800 people, exposed the poverty of New Orleans and the lack of accountability in public early warning and evacuation systems. Those who refused to leave the city or could not afford to evacuate, including many African Americans, were stranded when the city's levee system failed.

Katrina forced one million people from their homes and left 372,000 children without schools. In the aftermath of the storm, children were housed in overcrowded, noisy, poorly equipped shelters without safe places to play. A year after the storm, many children were still living in temporary situations, and studies have found high rates of anxiety and depression among children trying to re-adjust to life after Katrina.

Climate change will also contribute to typically overlooked 'slow-moving' disasters, including desertification, rising sea levels and degradation of forests and fisheries. The rising sea level – potentially by an average of over 40 centimetres by 2080 – will threaten the very existence of small island states and affect millions of people.¹⁶

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Overall, natural disasters are likely to lead to unprecedented numbers of 'environmental refugees' or 'environmentally displaced people'.¹⁷ Regions that rely most heavily on agriculture will be most affected; environmental migration is already most acute in sub-Saharan Africa, but millions of people in Asia and India are also on the move.¹⁸ The UN estimates that by 2010 there will be 50 million such people worldwide.¹⁹ Given the demographics of the countries most likely to be affected and the traditional composition of displaced populations, most environmentally displaced people will be women and children.²⁰

Climate change and urbanisation

Africa is the continent most severely affected by desertification, and two thirds of the continent's mass is desert or drylands.²¹ Less rain and soaring temperatures due to climate change are likely to aggravate this already precarious environmental situation, as people who have little alternative continue to exploit land by farming and foraging. In the most severe cases of land degradation, of which desertification is a part, affected land becomes unusable and damage is irreversible. This has a dramatic impact on children's lives, their access to food and water, and economic stability.

The trends of climate change and urbanisation are linked, as people will migrate away from unusable land and seek employment opportunities in cities. Sub-Saharan Africa already has the world's highest rate of urban migration.²² Overall, in the next two decades, the global urban population is expected to double, from 2.5 billion to 5 billion.²³

Increased urbanisation will lead to more difficult and crowded conditions in cities that do not have the infrastructure and services to cope with huge influxes of people. More than a billion people already live in urban slums²⁴, where child mortality is 10-20 times greater than in cities with adequate sanitation.²⁵

So-called 'megacities', where populations are growing at alarming rates, are at particular risk: Bombay, Tokyo, Lagos, Delhi, San Paolo, Mexico City, Dhaka. These cities will have populations in excess of 20 million people in 2015, and all are also at direct risk of either earthquakes or flooding.

Threats to food security and livelihoods

Climate change, of course, is not the only factor influencing children's vulnerability. Save the Children has built up a large body of research about the variables that determine food security. Government policy, access to irrigation and fertilizer, local customs and adaptation measures by individuals and families all affect people's access to food.

In developing countries, however, children and their families rely heavily on natural resources for their livelihood. Understanding the impact of climate change on these natural resources is crucial, as changes to the health of the ecosystems will in turn threaten survival.

Children's direct or indirect dependence on subsistence farming and agriculture, which is highly vulnerable to climate variability, places them at particular risk to the consequences of climate change. Most developing countries' agricultural activities are rain-fed, which means crop yields

depend on predictable levels of precipitation.²⁶ Where irrigation of commercial farming is concerned, many rivers are already over-extended – the Zambezi and Limpopo rivers in southern Africa, for example, will not be able to sustain new proposed irrigation schemes based on climate change predictions.²⁷

Increases in droughts are likely, according to the IPCC. This in itself should be a major cause for concern: droughts and famine accounted for nearly 50 per cent of all disaster-related deaths between 1994 and 2003.²⁸

Rising sea levels and coastal livelihoods

A global rise in sea level is now inevitable and unavoidable, even if immediate political action is taken to curb greenhouse gas emissions. Higher sea levels will have serious effects on most of the 1.2 billion people who live in coastal zones, which are three times more densely populated than the average for the rest of the world. Possible impacts for children and their communities include loss of coastal homes, increased flood risk, damage to roads and networks, and depletion and disruption of fisheries. Higher sea levels are also likely to lead to a loss of tourism, recreation and cultural facilities.

The actual impacts will depend heavily on the capacity of communities, families and children themselves to adapt, with possible solutions and strategies ranging from building better physical protection from sea level rises to re-locating further inland. Delta regions in countries such as Bangladesh, as well as low-lying small islands, will almost certainly need aggressive adaptation and mitigation policies.

At the household level, some examples of this would be:

- families of fishermen who have lost their jobs will have to find new work
- shopkeepers, traders and those in services will have to relocate inland with their families, or their children will face separation from one or both parents who are forced to migrate to find work.

Climate change is not the only threat to a family's livelihood, of course, but it will certainly have a strong compounding effect. Fuel and food availability for families and their livestock are subject to several factors, including weather, changes in technology, changes in trade patterns and change in patterns of demand for cereals.

If droughts, floods and periods of very high temperatures become more frequent, the time available for households to recover diminishes, and a 'normal' cyclical pattern of good and bad years deteriorates. This would ultimately lead families into chronic poverty and destitution.

Threats to children's health

Some 170 million children under five suffer chronic malnutrition.²⁹ Those in Africa are the most at risk from increases in drought due to climate change: African countries have been identified as being the most vulnerable to drought, and since the 1960s droughts have particularly affected the Sahel, the Horn of Africa and Southern Africa.³⁰ As many as 220 million people in Africa are exposed to drought every year.³¹

The prospect of repeated drought cycles – and the toll they take on a community's ability to access and secure food – is alarming, as more children under the age of five in developing countries already die of malnutrition than of anything else.³² Worse, malnourished children, already particularly vulnerable to infection, are likely to be exposed in greater numbers to vector-borne diseases such as malaria and dengue fever as a result of increased flooding, warming and changes in rainfall.

Flooding associated with climate change will increase the likelihood that vector-borne diseases will move into areas where they are not already endemic.³³ According to one estimate, the percentage of the world's population exposed to malaria will increase from 45 per cent to 60 per cent by the end of the century.³⁴ Malaria is already one of the biggest killers of infants, and it is particularly dangerous to pregnant women.

Climate change will also threaten safe drinking water and sanitation. Rising sea levels could lead to the salinity of estuaries, which might threaten groundwater sources. If safe drinking water is contaminated, people will rely more and more on unsafe sources. There is also the possibility that in some areas rising sea levels will flood latrine pits, polluting groundwater. This could have a particularly deleterious effect on children's health, as diarrhoea already accounts for nearly two million deaths of children under the age of five.³⁵

Several other climate-sensitive diseases, including Rift Valley fever, Chagas' disease, cholera, leishmaniasis, yellow fever and tick-borne encephalitis, are likely to increase as the effects of climate change, particularly flooding, create ideal environments for diseases to spread and mosquitoes to breed.³⁶

Poor and disaster-prone countries already struggling with high rates of infant mortality

Country	Likely to be affected by global warming?	Human Development Index Rank	Infant mortality rate (per 1000 live births) 2004 ³⁷
Indonesia	√	108	30
Vietnam	√	109	17
India	√	126	62
Bangladesh	√	137	56
Nepal	√	138	59
Kenya	√	152	79
Malawi	√	166	110
Mozambique	√	168	104
Chad	√	171	117
Central African Republic	√	172	115
Mali	√	175	121
Niger	√	177 (last)	152

Sources: UNDP (2006) Human Development Index and Save the Children (2006) State of the World's Mothers

Disaster Risk Reduction

In this current and future landscape of increased disasters and increased vulnerability, it is clear that governments, humanitarian agencies and the wider international community must be better organised to help children and their communities prepare for and mitigate the effects of climate change.

It is important to recognise that governments and donors have the power to make positive changes that can address food insecurity and vulnerability even in the face of climate change. The very fact of climate change demands that attention be focused on the pressures that are already known to increase families' vulnerability.

While some individual adaptation may be possible and will take place, government action is necessary to build new infrastructure and foster favourable investment environments in threatened areas. This includes ensuring that the education available for children is suited to the changing environment.³⁸

Humanitarian agencies already have or are developing many of the tools to assess and address the needs of communities overwhelmed by both sudden and slow-onset disasters. However, more needs to be done. Innovative approaches to working with children and their communities will be required, as traditional coping mechanisms might not be sufficient, and past experience is no longer a reliable guide to the future. The scientific consensus and accumulated political commitments should make 2007 the year to shift gear and address climate change on local, national and international levels – and particularly to focus attention on children.

Political commitments

Given that a community's ability to adapt to climate change will depend largely on its stage of development, communication and emergency management systems, developing countries will need to partner with richer countries to build capacity. Rich countries must also bear responsibility for climate change itself. The injustice faced by impoverished children in developing countries is particularly egregious, given that they have played no part in creating the problem.

This has already been formally recognised at the political level: at the Rio Earth Summit in 1992; the UN Summit on Sustainable Development in Johannesburg in 2002; and the Kyoto Protocol in 1997, an amendment to the UN Framework Convention of Climate Change that assigned mandatory targets for reductions in greenhouse gases. As of February 2007, 168 countries had ratified the Kyoto Protocol.³⁹ Notably, the United States, the world's largest emitter of greenhouse gases, and Australia, have not ratified the protocol. India and China (the second biggest polluter after the United States) have ratified Kyoto. However, as developing countries, they are not required to adhere to binding targets to cut greenhouse gas emissions.

In 2005 the UK Government's Commission for Africa recommended that "donors should make climate variability and climate change risk factors an integral part of their project planning and assessment by 2008"⁴⁰. Also in 2005, the G8 agreed in its Plan of Action to "help vulnerable communities adapt to the impact of climate change".⁴¹

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While political statements and international agreements are a step in the right direction, countries must be held accountable to their climate change commitments. The UK, for example, set itself a target of reducing carbon dioxide emissions by 20 per cent from 1990 levels by 2010, but according to its own figures it will fall short of this target by almost four per cent.⁴² As for the European Union, the 15 member states who have a collective emissions target under the Kyoto Protocol will need to take drastic measures in order to meet that target.⁴³ Nevertheless, recently the EU has made other commitments: all 27 states have committed to a 20 per cent boost overall in renewable fuel use by 2020, as well as to cut carbon dioxide emissions by 20 per cent compared with 1990 levels.⁴⁴

In 2006, the UK Department for International Development (DFID) earmarked ten per cent of all emergency response funding for DRR following each major emergency,⁴⁵ but it is yet to be seen how this will be implemented and measured. This is a positive step, and other donors, especially EU member states, should match or better this commitment.

It is difficult to estimate how much funding is spent on DRR, mainly because DRR is often for good reason integrated into development programmes. It is clear, however, that DRR initiatives are poorly funded compared with emergency humanitarian assistance and relief, and post-disaster reconstruction.

The best indication that donors are moving in the right direction is the Hyogo Framework for Action, a plan developed to reduce the impact of natural disasters and adopted by 168 countries at the World Conference on Disaster Reduction in Kobe Hyogo, Japan, in 2005. The Hyogo Framework sets out a clear strategy for DRR in which UN agencies, national governments and communities all have roles to play. Just over a year since its adoption, the Hyogo Framework has already had a major practical impact. Many countries worldwide, including India, Sri Lanka, Peru and Panama, are enacting new laws to incorporate DRR into national policies, and several donors have developed policies to ensure the integration of DRR in their work with developing countries.

The Hyogo Framework is just a start, however, and donors should commit to funding DRR in all aspects of cooperation with developing countries, especially poverty reduction strategies.

Children as problem-solvers

Save the Children has worked on disasters and food insecurity since its foundation in 1919. Recently, the Save the Children Alliance adopted DRR as a priority initiative to help Indonesia, Thailand, Sri Lanka and India 'build back better' after the 2004 Indian Ocean tsunami. These programmes were adapted primarily from Save the Children's previous work in Cuba and Vietnam, which focused on children as leaders and activists, and empowered them to engage in disaster preparedness in their schools and communities. In Cuba, among other activities, children monitored rainfall and communicated with authorities. In Vietnam, children participated in role-playing and drawing contests. After they identified the need for boats to get to and from school during the flood season, local communities provided them.

In Save the Children's experience, the best successes come when children identify concerns and risks, and participate in – rather than be passive recipients of – risk reduction strategies. In Cuba and the countries hit by the 2004 tsunami, children have been involved in village-based risk mapping and developing clear and simple printed materials. In Bangladesh, children collected data and contributed to baseline assessments. In the Indian states of Jammu and Kashmir, Rajasthan, Tamil Nadu, Andhra Pradesh, and on the Andaman and Nicobar Islands, children participated in rapid assessments, mapped hazards and identified risk areas.⁴⁶

Save the Children's child-centred DRR

In December 2006, Save the Children held an international risk reduction workshop where staff and specialists drafted a global child-centred DRR strategy, a research plan, and child-led programme guidelines and definitions. In developing the strategy, Save the Children considered adopting existing models of DRR, including the UN's Framework for Disaster Risk Reduction, but decided that existing models did not include all components of DRR and none represented the role of children.

Save the Children staff will use those materials, as well as experience from countries hit by the tsunami, Cuba, Vietnam and other programmes worldwide to produce a resource pack on DRR. The pack, which will consist of a video, a written manual and a toolkit for children, will be published in June 2007. It will focus on Save the Children's distinctive approach – having children lead all phases of DRR, the planning, implementation and evaluation of the programme. The pack will be used to promote the role of children in DRR across the Save the Children Alliance, with governments, UN agencies, NGOs and other partners.

The active participation of children in DRR can be an important tool for addressing the challenges of climate change. Not only are the two issues interlinked, but many of the same approaches and involvement of children in raising awareness and reducing vulnerability can be harnessed to promote environmental protection, sustainable use of resources and adaptation.

Save the Children has a track record of working with children in broader environmental programmes, including habitat protection, tree planting, erosion control and clean up campaigns. Children have also participated in environmental activism with governments and communities. For example, in Cuba children worked with grandparents to carry out research on traditional knowledge of environmental sensitivity.

The concern children feel about inheriting a world where habitats, species and natural beauty are diminished is also important. Children cited this as one of the key motivating factors behind their participation and activism in Save the Children's programmes in the Caribbean and other regions.

Linking disaster response to analysis of livelihoods

While child-centred DRR policies have proved to be effective in helping children prepare for and mitigate the risk of disasters, Save the Children has a specific tool, the Household Economy Approach (HEA), which shows the impact of disasters on people's livelihoods. By examining people's ability to earn money or food through labour, bartering, outside support or subsistence farming, HEA analyses people's ability to access and secure food for their families.

HEA is not only able to identify the most vulnerable populations but also to calculate the size of their food deficit. This is particularly useful to humanitarian agencies and governments trying to estimate shortfalls and protect children from malnutrition when a main source of food or income has failed.

Current livelihood patterns will be affected by changes in temperature or changes in sea levels.⁴⁷ In the absence of very clear predictions about future climate-related shocks, humanitarian agencies and governments should use existing baseline data and HEA or other tools to illustrate possible impacts. These scenarios could be used to identify appropriate interventions, adjustments to poverty reduction strategies, and increases in livelihood support. In quick-onset disasters, rapid vulnerability assessment should be used to complement HEA in order to ensure that humanitarian response is targeted appropriately.

Food security, education and child protection

Education and child protection are closely linked to food security and the economy of the household. It is often the case that children are pulled out of school if there is no money for school fees, or if the child is needed to work in place of a sick parent or to care for younger siblings. In addition, as Save the Children has documented in West Africa, East Asia and Eastern Europe, exploitation of children – including sexual abuse, trafficking or early marriage – increases when families are under severe economic pressure.

The concept of inter-generational equity, the obligation of the current generation to protect the health of the planet for future generations, will come into question in cases of livelihood programming that require prioritising immediate human survival above sustainable development. In such cases, appropriate mechanisms will need to be developed to maximise both goals. Given that future generations of children will be even more seriously affected by climate change than children who are growing up now, it is clear that international action focused on children and climate change is vital.

Conclusion

Although climate change is certain, its actual effect on children will largely depend on political choices of governments and donors. As climate change compounds other causes of mortality and vulnerability, policy makers must address this very serious threat to children's health and family livelihoods in developing countries.

Donors should adjust their spending to support DRR and adaptation efforts *now*, rather than wait until more lives are lost and international efforts are more expensive. From the individual child to the household level, to the community and national level, an adequate international response to climate change will demand new ways of working, imaginative solutions, and must have the active engagement of children and their communities.

Children are key to addressing both disaster risk reduction and climate change issues – children as leaders and activists can bring about major changes in knowledge, attitudes and practices. As they

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are disproportionately affected by disasters, DRR programmes must have an adequate assessment of children's needs and rights, and involve them in the design of the strategies. This not only decreases the specific risks children face, but it ensures their participation and, as a result, increases their capacity and confidence to cope with disaster.

Recommendations

- Rich, industrialised countries should reduce carbon emissions by 80 per cent by 2050 and agree to limit global warming to no more than two degrees Celsius through a new treaty based on the Kyoto Protocol.
- Donors should shift their funding to provide more money for DRR now, in the light of clear evidence of climate change. Funding for DRR should be increased and linked to existing measures to increase children's protection, access to health and education, and livelihood support for struggling families.
- Children must be actively involved in international, national and local efforts to mitigate the effects of climate change. Donor-funded disaster responses should include child-centred DRR that identifies specific causes of children's vulnerability and post-disaster opportunities to increase children's participation.
- All DRR programmes should assess specific needs of children, and the impact of DRR programmes should be measured, at least in part, against meeting childrens' needs.

Save the Children UK's Humanitarian Policy Team
April 2007

Notes:

¹This is a considered estimated based on data from the International Federation of the Red Cross and Red Crescent Societies World Disasters Report 2006. Our estimate assumes that current trends will hold, resulting in increases in natural disasters.

² Watterston, Tony and Simon Lenton. *Sustainable development, human induced global climate change, and the health of children*. British Medical Journal 87 (1997): 95-97.

³ *As ranks of 'environmental refugees' swell worldwide, calls grow for better definition, recognition, support*, The UN University's Institute for Environment and Human Security, 7 March 2007
<http://www.ehs.unu.edu/index.php/article:130?menu=44>.

⁴ Evidence from UNHCR and Save the Children's own experience in the field indicates that at least half of all those affected in emergencies are children.

⁵ The International Panel on Climate Change was established by the World Meteorological Organization and the United Nations Environment Programme in 1988. 7 March 2007 <http://www.ipcc.ch/>.

⁶ Stern, Sir Nicholas. *The Stern Review Report on the Economics of Climate Change*, HM Treasury, 7 March 2007
http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.

- ⁷ *Retreating glaciers spur Alaskan earthquakes*, NASA, 7 March 2007 <http://www.nasa.gov/centers/goddard/news/topstory/2004/0715glacierquakes.html>; *Climate change could cause earthquakes and volcanic eruptions, scientists say*, Canadian Press, 13 March 2007 http://www.climateemergency.org/joomla/index.php?option=com_content&task=view&id=44&Itemid=110; *How melting glaciers alter Earth's surface, spur quakes, volcanoes*, by Sharon Begley, Wall Street Journal Online, 13 March 2007 http://online.wsj.com/public/article/SB114981650181275742sOx58NXvfKz2szefZXutgTSbaDI_20070608.html.
- ⁸ See note 1.
- ⁹ The Stern Review.
- ¹⁰ World Disasters Report 2006.
- ¹¹ *The tsunami's impact on women*. Oxfam, 7 March 2007 http://www.oxfam.org.uk/what_we_do/issues/conflict_disasters/downloads/bn_tsunami_women.pdf.
- ¹² *Children account for one third of tsunami dead*, UNICEF, March 7 2007 http://www.unicef.org/emerg/disasterinasia/24615_24659.html.
- ¹³ World Disasters Report 2006, Annex 11
- ¹⁴ World Disasters Report 2006.
- ¹⁵ Climate change FAQ, G-8 Gleneagles 2005, 7 March 2007 <http://www.g8.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1097073183614>.
- ¹⁶ *Ibid.*
- ¹⁷ There is no consensus on how best to describe people forced to flee their homes because of environmental degradation, though there have been calls to define, recognise and extend support to this new category of migrant.
- ¹⁸ *As ranks of 'environmental refugees' swell worldwide, calls grow for better definition, recognition, support*, The UN University's Institute for Environment and Human Security, March 7, 2007 <http://www.ehs.unu.edu/index.php/article:130?menu=44>.
- ¹⁹ *Ibid.*
- ²⁰ 51% of the population in sub-Saharan Africa is under the age of 18 (UNICEF); A large number of IDPs are women, often widows or single mothers; children, many of whom are unaccompanied by their families; and elderly people (OCHA: Humanitarian Report 1997, Internally Displaced People).
- ²¹ *Impacts, vulnerability, and adaptation to climate change in Africa for the African Workshop on Adaptation, Implementation of Decision*, UN Framework Convention on Climate Change, UNFCCC Convention (Ghana), September 2006.
- ²² *The challenges facing an urban world*, BBC, 7 March 2007 <http://news.bbc.co.uk/1/hi/sci/tech/5054052.stm>.
- ²³ *The Challenge of the Slums: The global report on human settlements 2003*, UN Human Settlement Programme, 7 March 2007 <http://www.unhabitat.org/pmss/getPage.asp?page=bookView&book=1156>.
- ²⁴ *Waking up to realities of water and sanitation problems of urban poor*, press release HAB 184, UN Habitat. 7 March 2007 <http://www.un.org/News/Press/docs/2003/hab184.doc.htm>.
- ²⁵ *Ibid.*
- ²⁶ The Stern Review.
- ²⁷ Email from Save the Children's Global Advisor based in South Africa.
- ²⁸ Centre for Research on the Epidemiology of Disasters, 7 March 2007 <http://www.cred.be/>.
- ²⁹ UNICEF, 7 March 2007 http://www.unifec.org/media/media_35898.html.
- ³⁰ *Impacts, vulnerability, and adaptation to climate change in Africa for the African Workshop on Adaptation, Implementation of Decision*, UN Framework Convention on Climate Change, UNFCCC Convention (Ghana), September 2006.
- ³¹ *Ibid.*
- ³² The Stern Review.
- ³³ *Ibid.*
- ³⁴ Watterston, Tony and Lenton, Simon. *Sustainable Development, human induced global climate change, and the health of children*. British Medical Journal 87 (1997): 95-97.
- ³⁵ *Ibid.*
- ³⁶ *Impacts, vulnerability, and adaptation to climate change in Africa for the African Workshop on Adaptation, Implementation of Decision*, UN Framework Convention on Climate Change, UNFCCC Convention (Ghana), September 2006.

³⁷ *State of the World's Mothers Report 2006*, Save the Children, 7 March 2007

http://www.savethechildren.net/alliance/what_we_do/newsdesk/2006-05-08b.html.

³⁸ Many of the effects described here are also exacerbated by local and national practices of natural resource management, environmental policies, industrialisation, agricultural practices, and other trends such as conflict and migration. However, a detailed examination of environmental risks not linked to climate change goes beyond the scope of this short summary briefing paper.

³⁹ Status of Ratification, Kyoto Protocol background. 7 March 2007

http://unfccc.int/kyoto_protocol/background/status_of_ratification/items/2613.php.

⁴⁰ *Our Common Interests*, Commission for Africa. 7 March 2007

<http://www.commissionforafrica.org/english/report/introduction.html>.

⁴¹ Plan of Action, G8 Gleneagles 2005. 7 March 2007

http://www.fco.gov.uk/Files/kfile/PostG8_Gleneagles_CCChangePlanofAction.pdf.

⁴² Autumn Performance Report 2006, DEFRA. 7 March 2007 <http://www.defra.gov.uk/corporate/apr/apr2006.pdf>.

⁴³ *Climate change: Member States need to intensify efforts to reach Kyoto emission targets*, EU press release. 7 March 2007

<<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1488&format=HTML&aged=0&language=EN&guiLanguage=en>>.

⁴⁴ *EU agrees renewable energy target*, BBC. 9 March 2007 <http://news.bbc.co.uk/1/hi/world/europe/6433503.stm>.

⁴⁵ DFID Disaster Risk Reduction (DRR) Policy: Implementation Plan, DFID. 7 March 2007

<http://www.dfid.gov.uk/pubs/files/disaster-risk-reduction-implementation.pdf>. According to this plan, DFID has committed to spending 10% of its emergency funding in individual disasters where its response is over £500,000 and it can be done effectively.

⁴⁶ At least two NGOs are also developing child-centered approaches to DRR: Plan UK has produced a child-centred DRR framework based on field experience, and ActionAid, which is the only NGO member of the UN's International Strategy on Disaster Reduction forum, has implemented a DFID-funded project working with 15,000 children in 56 schools in seven countries.

⁴⁷ HEA would not be able to predict how people would adapt to those structural changes, as this varies with individuals, families, culture and context.