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Climate change, food systems and children: a case for greater action

"In the few years that I've been here, the climate has really changed. Temperatures have gone up. The rainfall has dropped. As time goes by, things are getting worse and worse ... It rains once in three months, that's not normal. This has led to shortage of food and water, which has led to the death of animals. People lose their livestock and other people die due to starvation and hunger." Lourine, age 15, Lodwar, Kenya

Children are the least responsible for climate change and yet are the most vulnerable to its impact. Climate change is already having a devastating impact on the world's children. And, due to the cumulative effect of climate change, the impact is projected to get worse. The effects of climate-related shocks can be passed from generation to generation, leaving a lasting impact on children's ability to survive, grow and flourish.

Recommendations for action by the UK Government

1 To ensure that climate change will not further undermine the food system and jeopardise the life chances of children, carbon emissions must be reduced urgently. Therefore, the UK Government should

- Continue to push the EU to move to a target of 30 per cent reduction in emissions by 2020.
- Continue to give support to emerging economies and developing countries to pursue long term low-carbon development paths

2 To ensure that children in areas vulnerable to climate triggered food crises can cope with the impacts, the UK Government should

- Pursue adaptation policies in vulnerable countries to help communities affected by climate change's effect on food
- Recognise the risks faced by children in the context of food and nutrition and seek to adequately address these through adaptation.

3 New and additional financial resources are essential to ensure that effective adaptation and low carbon development programmes are in place to help children cope with the impact of climate change on food systems. The UK Government should therefore:

- Mobilise its fair share of the global commitment of US$100 billion of new and additional climate finance a year, and encourage others to do the same, helping put in place timelines and milestones for the Green Climate Fund.

1. The impact of climate change on the food system

One of the most significant effects of climate change is the impact on the global food system as it changes rainfall patterns, reduces agricultural yields and affects food security. Developing countries across Asia, Africa and Latin America are forecast to see reductions in agricultural productivity of between 9 and 21 per cent by the 2080s due to climate change.[1] In some places, the effects will be felt much sooner than that. By 2020, rising temperatures and variable precipitation are likely to reduce the production of staple foods by up to 50 per cent in some African countries, leading to declining yields and the abilities of families to feed themselves.

Furthermore, the Intergovernmental Panel on Climate Change's (IPCC) Assessment Report (2007) highlighted that agricultural production and access to food in many African countries is projected to be severely compromised by 2020.[2] This would further adversely affect food systems and exacerbate malnutrition. The IPCC went as far to state that "malnutrition linked to extreme-climatic events may be one of the most important consequences of climate change."[3]

Climate change is also increasing the frequency and severity of natural disasters. We know that children are hit hardest during natural disasters such as floods and droughts. These disasters also damage food production, killing livestock, destroying crops and forcing people to abandon their land. Less food and higher food prices increase the risk of children going hungry and becoming malnourished.

The effects of climate change on livelihoods can be sudden, such as droughts and floods, or slower but cumulative, such as changing long-term rainfall patterns. This cumulative effect is particularly notable in the case of food security and nutrition. Figures quoted by the Stern Review suggest that, with temperature increases of 2°C, up to 200 million people will be placed at risk of hunger across the world, rising to as many as 550 million with warming of 3°C in the next 50 years. By the end of this century, climate change is likely to double the frequency of extreme droughts and increase their average duration six-fold.[4]

The projected levels of greenhouse gas emissions and lack of action to reduce emissions through international action, indicates that these impacts will intensify to have a more profound and severe impact on the world's food system than the scenarios currently predicted.

Urgent action is therefore needed by governments to ensure that children are able to withstand the impact that climate change is having on the food system so that it does not negatively impact on their chance at a future.

1 *Global Warming and Agriculture*, IMF, 2008
2 *IPCC Fourth Assessment Report*, IPCC, 2007
3 Ibid
4 *The Economics of Climate Change: The Stern Review*, HM Government, 2006

2. Climate change and food: the impact on children

Challenges to the food system always hit children the hardest, and climate change is expected to have further economic, social and health impacts on the food system that will intensify this. For example, due to their developing physiology, children are more susceptible to malnutrition and are in turn more susceptible to illness and diseases associated with food scarcity and malnutrition. The 2012 *Climate Vulnerability Monitor* estimates that 200,000 people will die and 200 million people will suffer from food insecurity as a result of climate change in lower income countries – half of these deaths are projected to be children from lower income countries.[5]

i. Economic and environmental impacts

"Because of the high rainfall, the fertility for the corn is not good, and it means that the plants get unhealthy to the point where they die. If the corn dies, it also means that the people will have a difficult economic situation."

Jeri, Nusa Tenggara Timur, Indonesia

The impact of climate change on the natural environment that is essential for growing food, particularly in vulnerable developing countries can have considerable economic effects, especially for children whose families are dependent on subsistence farming. Climate change can reduce income from agriculture and livestock, and increase food prices and availability, causing malnutrition amongst children.

Agricultural yields and livestock

"Farmers plant their crops but … when the rain is expected to come, it does not. This causes hunger to most families, especially those that depend on farming. My friends and classmates … will be eating less food day by day. They can't afford new clothes and have to wear small clothes."

Naomi, age 13, Kericho, Kenya

Declining agricultural yields and increased rural poverty in developing countries is already making it harder for parents to feed their children, and the impacts of climate change will intensify this trend. Changing rainfall patterns due to climate change can have a profound effect on child nutrition. Malnutrition in children is increasing in countries where large populations are dependent on rain-fed subsistence farming, such as in semi-arid areas like the Sahel. Climate change can be seen as a significant driver of this trend. For example, as a result of climate change related excessive drought in Chad, the prevalence of global acute malnutrition (GAM) within these drought affected regions increased from 14.5 per cent in 2011 to 18 per cent in 2012.[6]

As well as affecting subsistence farming, climate change can also affect larger scale agriculture. Crop volumes, crop diversity and long term growing potential may be reduced by drought, floods and other climate-related stresses. This diminishes what is immediately available to the farming household and what can be bought at market. Research by UNICEF Indonesia in 2011 found that six in ten children noted that food became more expensive after too much or too little rain.

Livestock are also affected by the changing climate (both by gradual change and by the sudden impact of natural disasters). This may have consequences for the availability of meat and dairy products, and for the use of animals in small-scale agriculture. All of these factors affect the ability of parents to feed themselves and their children with healthy and nutritious food. This will further intensify as climate change continues to go unchecked. The case study below highlights how the impact of climate change on livestock in Mongolia is affecting children and food availability.

5 *2012 Climate Vulnerability Monitor*, DARA, 2012
6 *UNICEF Humanitarian Action Report*, UNICEF 2013

MONGOLIA: the impact of changing climate on food security

"In the last winter dzud [extreme snow], I took turns to herd our livestock of around 40 animals. I needed to dig the snow to help the livestock reach the grass, sometimes by hand. When there is a snow blizzard, I can't see my way and I'm afraid of getting lost. I'm also afraid of wolves. My cheeks and ears freeze and I get frostbite." Girl, 16, Arkhangai, Mongolia

Mongolia is highly dependent on pastoralism for sustaining livelihoods. The pastoral livestock sector engages more than half the population and provides food (meat and milk) and fibre to the majority of the population. Livestock rearing and crop production, as well as the grasslands and water resources on which they depend, are particularly vulnerable to droughts and dzud (extreme snow) events. Because of climate change areas unfavourable to grazing are expected to increase to 65–70 per cent by 2050 and to 70–90 per cent by 2080.[7] Some plant species are growing one to two months later as a result of declining precipitation, while others are growing with fewer leaves or at a reduced size. High-nutrient plants have also declined by 1.5–2.3 times since 1940.[8]

With poorer grazing conditions, the live weight of animals is expected to decrease significantly, especially in the forest-steppe and steppe regions. Data from 1980 to 2001 already shows a decline in the average weight of sheep (–4 kg), goats (–2 kg) and cattle (–13 kg).[9] Low weight affects other development processes, such as fertility and birth, productivity and resilience to cope with extreme winter weather. Animal mortality is expected to increase to 12 per cent by 2020 and to 18–20 per cent by 2050.[10] Livestock loss can have devastating effects. Livestock and livestock productivity is the livelihood base for nearly half of Mongolia's population. Rural populations are almost entirely dependent on livestock for nutrition as well as for trade and income. Loss of livestock means less income, less food and less protection for these populations.


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The 2010 dzud provides a telling example: A study by UNDP after the 2010 dzud found that of 32,500 small subsistence-level herders (owning fewer than 250 animals) in the 14 worst-affected regions, 17 per cent reported experiencing a shortage of food for daily consumption due to a lack of cash to buy food, resulting in hunger. The large number of livestock deaths (8.5 million) prevented families from selling milk, meat and cashmere fur for income. Families reported using cash for children's school supplies on food for the household. The implication is that even a small risk of increased droughts and effects to livestock as a result of climate change and the knock-on effects related to poor nutrition and disruptions in education could lead to development setbacks for children and their families.

Adapted from UNICEF research on children's vulnerability to climate change in East Asia and the Pacific 2011, UNICEF EAPRO

7 Dagvadorj et al., p. 205 (2009).
8 Boldgiv, p. 28 (2009).
9 Dagvadorj, p. 202.
10 As above, p. 72.

i. Social impacts

The impact of climate change on the food system – through its economic and environmental impacts can also have a range of social impacts (such as on education, migration and well being) that greatly effect children and their life chances.

Education

"Recently the harvest has reduced ... I know some children who have dropped out of school. They say they cannot concentrate in class because they are hungry. We have just one or two meals per day because food is expensive. A kilo of maize flour increased from 35 to 70 shillings, and my mother said it will get worse"

Justus, age 14, Budalangi, Kenya

Declining income from farming as a result of climate change can lead families to have less money for their children. This can mean that families cannot afford to send their children to school. In Indonesia, one in five rural children interviewed in 2011 stated that due to weather events, they had to leave school because there was not enough money for them to continue.[11]

This trend is compounded by the fact that poor levels of nutrition also lead to increased sickness among children, which in turn leads to poor attendance at school. A UN survey of progress toward the Millennium Development Goals found that school attendance rates are lowest in communities with the highest levels of malnutrition,[12] a trend that is only likely to intensify as climate change impacts further on malnutrition rates.

The impact of climate change on food and agriculture can therefore significantly affect access to education for children.

Risks to child protection

"I have lived here for seven years. Before there was rain, but now the rain is reducing and reducing ... There weren't so many street boys before but now there are a lot of street boys because there isn't enough food."

Jack Waigwa, age 15, Nakuru, Kenya

Although, it is an area still needing further research, existing research has highlighted that the impact of climate change on food security and livelihoods is likely also have an impact on child vulnerability to psychosocial risks. UNICEF UK's Our Children, Our Climate, Our Responsibility report highlighted that

11 *The impacts of climate change on nutrition and migration in Indonesia*, UNICEF, 2011
12 *Millennium Development Goals Report 2012*, UN, 2012

children who are less healthy and suffering due to malnutrition face more risks both physiologically and psychologically and the impacts of climate change could further exacerbate this trend.[13]

Families whose livelihoods are impacted adversely by climate change phenomena (such as droughts and floods) and subsequent changing food security might find it harder to provide for their children and thus protect children from abuse and exploitation. Forced migration for food and water access will also raise child protection concerns such as forced recruitment, displacement, family separation and exploitation.[14]

Declining family income due to changing agricultural yields might force children to be exploited through child labour. A Maplecroft study in 2010 argued that the impact of increasing climate stresses on agriculture will force more families to "remove children from education and into the workforce to support their families."[15] Once in work, children may be more vulnerable to abuse and exploitation.

Migration

Declining agricultural income due to climate change can lead families to migrate. As families become unable to feed their children and can no longer live off the land they farm, they migrate from rural to urban areas in search of new livelihoods. This in turn can lead to children being out of school, at increased risk of exploitation, and lacking sufficient nutritious food. There is also no certainty that families will find a better life for their children with migration to urban areas.

Rural to urban migration in low income countries due to changing agricultural yields is one of the most profound impacts of climate change. Nearly one in three rural children interviewed in Indonesia stated that their parents had to move for work because of harvest failure . The International Organization for Migration (IOM) puts this in global perspective, stating that "rural to urban expected to rise as a result of accelerated climate change, with unprecedented impacts on lives and livelihoods."

The effects of climate change on the food system, and subsequently children, can thus be seen on two levels. On one level, climate change reduces family income and the availability of nutritious food, affecting children's ability to survive. On a second level, the effects of climate change on the food system impacts on the ability of children to thrive, affecting their education, protection and opportunities for a fair future. Climate change is already having these effects, and these effects will continue to intensify if climate change continues unchecked.

13 *Our Children, Our Climate, Our Responsibility*, UNICEF, 2008
14 www.childfriendlycities.org/en/to-learn-more/related-topics/children-climate-change-and-cfc, UNICEF, 2012.
15 *Maplecroft Child Labour Index*, Maplecroft (2010). http://maplecroft.com/about/news/child-labour-index.html

3. Recommendations for action: protecting children from climate triggered food impacts

The impacts of climate change on the food system pose serious threats to children, particularly those in low income countries. Measures must be taken to ensure that children are protected from such impacts.

The UK Government, as an important actor in international climate action and international development has a vital role to play in implementing such measures. UNICEF UK recommends action by the UK Government in the following areas to ensure children everywhere can have a bright future, in spite of the challenges presented by climate change to the food system.

i) Tackling emissions and further climate change

The impacts of climate change that we are now witnessing on the food system are the result of historic greenhouse gas emissions by developed countries. Considering the impacts on food and agricultural productivity that the IPCC already predict with existing climate change, it is vital that we prevent even worse and extreme impacts.

Continued carbon loading of the atmosphere will continue to undermine the food system and life chances of children in affected countries. Ambitious, strong and legally binding emissions reduction targets in developed countries are essential to help prevent this. To this end, the UK should continue to push the EU to move to a target of reducing carbon emissions by 30% by 2020. Similarly, the UK should continue to give support to emerging economies and developing countries to pursue sustainable low-carbon development paths.

This action will help ensure that the global food system is not further undermined by additional climate change.

Recommendations for tackling emissions

- The UK Government should continue to push the EU to move to a target of 30 per cent emissions reduction by 2020.
- The UK Government should continue to give support to emerging economies and developing countries to pursue sustainable long term low carbon development paths

ii) Adaptation and equipping communities

Even if the world stopped emitting all greenhouse gases tomorrow, we will still see significant climate change as a result of historic emissions from developing countries – the lag time effect of greenhouse gas emission on Earth's atmosphere. We are already seeing significant impacts on the food system as outlined in this paper. If children are to be able to cope in such a changing climate, there is an urgent need to increase measures to equip them and their communities with the skills and resources to deal with the climate changes – a measure known as adaptation.

Adaptation and disaster risk reduction can help families cope with the impact of climate change on food production. Thus can include providing crops that are more drought resistant to smallholder families in areas that are increasingly prone to drought to ensure they are able to grow food in spite of the climate changes. This provides families with income and a food source that can help children have nutritious food. Other examples of adaptation that can help children and families cope with the impacts of climate change on food include rainwater harvesting: collecting and storing water in rainy periods that can be used for irrigation to grow food in dry periods. Early warning systems can also be set up in areas affected by climate triggered food insecurity. Such systems can help ensure that children at risk of malnutrition get the food they need before the crisis strikes.

The UK Government has a progressive record in climate change programming through its international aid activity. Within this, it is important that they prioritise adaptation that helps communities prevent or cope with food crises caused by climate change. Moreover, it is vital that they ensure that such adaptation strategies are implemented, so that the risks faced by children from changing food security are addressed, and children reap the benefits of adaptation.

Recommendations for adaptation strategies

- The UK Government should pursue adaptation policies at scale in vulnerable countries to help communities cope with the effects of climate change on food security
- The UK Government's adaptation work in these contexts should adequately recognise the risks faced by children in the context of food and nutrition and seek to adequately address these risks.

ETHIOPIA: adaptation to help children cope with food security challenges

Shilime lives in Ethiopia with her elderly mother and two children. In 2011, the rains on which they depend for their corn harvest were late. As a consequence, food stocks became low and the children rapidly lost weight. Her 18-month-old daughter Shegitu became severely malnourished – a condition that can hinder healthy development and if left untreated can cause death. The impacts of climate change are causing such droughts to become more frequent and intense.

Neighbours told Shilime about the UNICEF-supported feeding programme at the village health post.

Prior to the establishment of the health post, villagers had to walk for two hours to get to the closest facility. Shilime says that *"If the health post was not there, I would not have known what to do. I would have stayed at home helpless, and Shegitu would probably have died."* But since she joined the programme, Shegitu's recovery has been amazing.

UNICEF-supported training and supplies of ready-to-use therapeutic food has increased the resilience of communities in Ethiopia, reducing the risk of preventable child deaths during times of drought and helping children to begin to cope with the impacts of climate change.

Adapted from *Telling the DRR* Story (UNICEF, 2012)

iii) Financing of climate strategies

New and additional financial resources are essential in order to deliver effective adaptation and support the low carbon development needed to tackle the impacts of climate change on food systems.

Climate change, and in particular its impact on food, provides an additional challenge on top of those that Official Development Assistance (ODA) is meant to address. It is therefore essential that new resources are found for climate change – known as 'climate finance'.

In 2009 in Copenhagen, governments agreed to mobilise US$100 billion dollars per year by 2020 for climate change adaptation and mitigation in developing countries. This is based on the projected need from 2020 onwards and they stated that it must be "new and additional" resources; that is, additional to the existing international aid budget. This sum is roughly equivalent to the total current global flows of ODA. Long-term climate finance (additional to ODA) is essential to protect those children most vulnerable to climate change. Mobilisation of long-term climate finance is therefore essential if we are to protect children everywhere from malnutrition and other health consequences of a changing climate. The UK Government has so far shown international leadership on climate finance – committing £2.8 billion of ODA to climate change between 2010 and 2014. However, the effects of climate change will continue to intensify and new sources of finance will be needed. The UK Government should therefore fulfil its commitment to provide new and additional long- term climate finance to address the impact of climate change on children. We hope the G8 and G20 will identify ways in which they can work together and commit to additional funding for a climate fund.

Recommendation for financing

- The UK Government should mobilise its fair share of the global commitment of US$100 billion of new and additional climate finance a year, and encourage others to do the same. The UK Government should help put in place a timeline and milestones for increasing climate finance such as through the UNFCCC work programme on long term finance in 2013.

4. Taking action now

As this paper outlines, climate change is already having a devastating impact on the food system, particularly in low income countries. This is hitting children the hardest, despite the fact that they are least responsible for the causes. The impacts of climate change on food are set to intensify in the coming years. It is therefore essential that action is taken immediately by countries such as the UK to ensure children in vulnerable countries do not see their lives undermined by climate change.

2013 provides a number of high profile opportunities to take action to help tackle the impacts of climate change on food. UNICEF UK encourages the UK government to show leadership in these forums: at the Irish EU presidency event on Food and Climate Change in April; at the UNFCCC negotiations; at the G8 in June and the G20 in autumn this year.

Strong leadership and decisive action on climate change can help ensure children everywhere grow up to fulfil their potential and have enough nutritious food.

References

- *Global Warming and Agriculture* (IMF, 2008)
- *IPCC Fourth Assessment Report* (IPCC, 2007)
- *The Economics of Climate Change: The Stern Review* (HM Government, 2006)
- *2012 Climate Vulnerability Monitor* (DARA, 2012)
- *Humanitarian Action Report 2013* (UNICEF, 2013)
- *Our Children, Our Climate, Our Responsibility* (UNICEF UK, 2008)
- *The impacts of climate change on nutrition and migration in Indonesia* (UNICEF, 2011)
- *Millennium Development Goals Report 2012* (UN, 2012)
- *Climate Change in Kenya: focus on children* (UNICEF UK, 2010)
- *Children's vulnerability to climate change in East Asia and the Pacific* (UNICEF, 2011)
- *Telling the DRR Story* (UNICEF, 2012)

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