

**Tackling Climate Injustice:**  
towards an equitable response to  
a global crisis

**TROCAIRE**  
Working for a Just World



This policy report has been produced by Trócaire, the Irish Catholic Agency for World Development. Trócaire is a member of CIDSE and Caritas Internationalis. The report was written by Niamh Garvey, Trócaire Environmental Justice Policy Officer. Trócaire would like to thank Professor John Sweeney, Tom Campbell and Colin Roche for their comments on earlier drafts of this paper.

For further information please contact:

Niamh Garvey

Environmental Justice Policy Officer

Trócaire

Maynooth

Co. Kildare

Ireland

Tel: 00353 1 629 3333

Fax: 00353 1 629 0661

[www.trocaire.org](http://www.trocaire.org)

## TABLE OF CONTENTS:

Abbreviations .....	4
EXECUTIVE SUMMARY .....	5
1. HITTING THE POOREST HARDEST .....	7
1.1 Water insecurity .....	7
1.2 Food insecurity .....	9
1.3 Health .....	9
1.4 Disasters .....	9
1.5 Sea level rises - land loss .....	10
2. ROBBING OR RECLAIMING THE FUTURE? .....	11
3. TACKLING CLIMATE INJUSTICE .....	13
3.1 Tackling the causes: MITIGATION .....	13
3.2 Dealing with the impacts: ADAPTATION .....	15
4. RECOMMENDATIONS .....	19
NOTES & REFERENCES: .....	21

## **Abbreviations**

IPCC	Inter-governmental Panel on Climate Change
LDC	Least Developed Country
NAPA	National Adaptation Programmes of Action
ODA	Official Development Assistance
UNFCCC	United Nations Framework Convention on Climate Change

## EXECUTIVE SUMMARY

Climate change is an issue of profound injustice, as it is the people around the world who have contributed least to creating the problem, who are being disproportionately affected by the impacts.

The impacts of unpredictable rainfall, increasing droughts, floods and hurricanes are already being felt across the developing world, and the poorest people in these countries are being hit the hardest. In order to tackle poverty it is necessary to tackle climate change. This means addressing both the causes and the consequences of climate change in an equitable way.

The interaction between climate change and poverty is potentially catastrophic as climate change pushes what are already fragile livelihoods over the edge.

### Scale of the challenge

If greenhouse gas emissions continue to grow at their current rate, average global temperatures could rise by 2-3°C over the next fifty years, and could eventually exceed 5-6°C by the end of the century.<sup>1</sup> Even if we freeze greenhouse gas emissions now, the main cause of climate change, at current levels we could see a further rise of at least 1.8°C in this century alone.<sup>2</sup>

It is widely recognised that global temperature rises must be kept within a limit of 2°C above pre-industrial levels in order to prevent 'dangerous' climate change. However, for many of the world's poorest people, climate change is already dangerous, and for this reason supporting developing countries to adapt to these changes must be a central part of the response to climate change. Estimations of how much it will cost for this adaptation will be at least US \$50 billion, only a tiny fraction of which is forthcoming.

### Recommendations

The **international community** is failing to do enough to tackle the causes and consequences of climate change. Those who created the problem, and have the ability to pay should foot the bill. Rich governments, therefore, must take urgent action to do their fair share on mitigating the causes and facilitating adaptation to the impacts:

Mitigation:

- Negotiate an international agreement that will keep global temperature rises to as far below 2°C as possible
- Cognisant of equity and historical responsibility, rich countries should agree to reduce their greenhouse gas emissions by 80% below 1990 levels by 2050

Adaptation:

- Ensure that vulnerable communities in developing countries have the capacity to cope with the impacts of current and future climate change by providing adaptation financing and transfer of technology
- Adaptation funding must cover the full costs of adaptation, at least US \$50 billion a year
- Adaptation funding should be additional to official development assistance (ODA), by way of compensation
- Adaptation mechanisms must operate clearly and transparently, and pay sufficient attention to how they will impact differently on men and women
- Those who are intended beneficiaries should have a voice in adaptation mechanisms
- Adaptation mechanisms must be operational as soon as possible, and must avoid unnecessarily burdensome processes that may limit the ability of the least developed countries to access funding
- Innovative forms of financing that could assist in generating the necessary funds for adaptation should be explored

In **Ireland**, the government must:

- Ensure that at the international level the above commitments on adaptation and mitigation are made
- Take urgent action to reduce emissions
- Advance legislation to enshrine into law Ireland's commitment to reduce greenhouse gas emissions by 3% per year
- Recognise funding for adaptation to developing countries as compensation, and not count it against the aid budget

In the **UK**, the government must:

- Ensure that at the international level the above commitments on adaptation and mitigation are made
- Increase emission reduction targets in the Climate Protection Bill from 60% below 1990 levels by 2050 to 80% below 1990 levels by 2050
- Recognise funding for adaptation to developing countries as compensation, and not count it against the aid budget

**Trócaire:** Playing our part:

Inspired by Catholic Social Teaching, Trócaire works for a just and sustainable world for all. We reaffirm our objective to reduce poverty and work for social justice, including environmental justice, and commit to:

- Assisting vulnerable communities in developing countries to adapt to the impacts of climate change through our programmes on the ground
- Demanding justice from the international community by advocating and campaigning for the Irish and UK governments to do their fair share to tackle the causes and consequences of climate change
- Addressing our own contributions to climate change, by taking action to reduce our carbon footprint.

## 1. HITTING THE POOREST HARDEST

*“The impacts of climate change are being felt in developing countries, and even more so in the most vulnerable areas. Before we were winning, now we are losing - because the rains have changed.”*

Stephen Waweru, acting director of Trócaire partner Caritas Nyeri, Kenya<sup>3</sup>

*“The farmers are suffering because nothing happens when it is supposed to - traditional rainy seasons are no longer predictable. The numbers of droughts have doubled since the late 1970s and when the rains come, they come in torrents.”*

Minister Monyane Moleleki, Minister of Natural Resources, Lesotho<sup>4</sup>

Climate change is being most keenly felt by some of the poorest communities in the world. People living in developing countries are more vulnerable to the impacts of climate change due to the combination of a number of factors:

*i) Living in areas that are seeing some of the biggest impacts of climate change:* Many of the areas that are experiencing the more extreme changes in the climate are in developing countries, in areas where existing weather phenomenon, such as El Niño and La Niña are also a factor.<sup>5</sup> The areas identified as most at risk are low-latitude dry areas and mega-deltas, mostly located in developing countries.<sup>6</sup>

*ii) Reliance on activities that depend intimately on the weather:* The majority of the world's poorest people live in rural areas, and rely on agriculture. They depend heavily on the land, water resources and on the weather. Even the smallest changes in the weather, brought about by changes to the climate, can make poor people more vulnerable due to the impacts this has on these basic resources.

*iii) Existing levels of poverty mean that communities are less able to cope with the impacts of these changes:* The interaction between climate change and poverty is potentially catastrophic as climate change pushes what are already fragile livelihoods over the edge. The dynamics of HIV, poverty, increased pressure on natural resources, and marginalisation are combining to increase the threats and risks faced by highly vulnerable communities. The majority of people living in poverty are women, who often bear more responsibility for maintaining the household, collecting water and bear the burden of caring for those who may have ill health. Women have fewer rights and less influence over decisions and policies that impact their lives. Climate change, superimposed on these existing vulnerabilities, deepens poverty and inequality for the most marginalized. The examples below illustrate the ways in which climate change has already begun to exacerbate existing vulnerability:

### 1.1 Water insecurity

Currently, 700 million people in 43 countries live below the water stress threshold (of 1,700 cubic metres per person per year), including one quarter of

the population of Sub-Saharan Africa.<sup>7</sup> Climate change affects rainfall patterns as temperatures rise and the water cycle is altered. Two tendencies have emerged that serve to exacerbate existing patterns and vulnerabilities.

Firstly, dry areas are becoming drier and wet areas are becoming wetter. Over the past few decades, more intense and longer lasting droughts have been experienced in the semi-arid sub-tropics, and over wider areas than before. In 2005 more than 20 million people were affected by drought in the Horn of Africa alone. In South Asia about 15% of people live in areas that were affected by drought since 2004.<sup>8</sup>

Secondly, there has been an increase in the unpredictability of rainfall, as patterns shift. Unpredictable rains are a threat for communities, even in areas where overall water availability may be relatively good. For example Ethiopia is relatively well endowed with water compared to most drought-prone countries, but the variability of rainfall patterns is a major problem for people dependent on rain-fed agriculture. Unpredictable rainfall is estimated to have pushed an extra 12 million people into absolute poverty in the late 1990s, and the World Bank has estimated that rainfall variability is responsible for reducing Ethiopia's potential for economic growth by one third.<sup>9</sup>

### **Box 1.1: Vulnerability and drought in Turkana, Kenya**

The Turkana region in Northwest Kenya is home to the pastoralist Turkana people. In this region, droughts have long been a fact of life. However, in recent years the frequency and duration of droughts has intensified. Kenya has been affected by a succession of unusually frequent droughts and floods since the mid-1990s. The economic impacts have been enormous. According to research prepared for the World Bank the droughts of 1998-1999 and 1999-2000 led to losses of 16% of GDP.<sup>10</sup> Entire Pastoralist communities have seen their herds and assets depleted.

#### **The Amodoi Family**

Three generations of the Amodoi family live in the area covered by Trócaire's partner in Lodwar, Turkana. Francis Amodoi sees drought and the weather as the main challenge he and his family face. He lost many of his goats to drought in 2006. He recalls that when he was the same age as his son Nangiro is now, droughts were less frequent. Francis's mother, Christina, who is now in her 80s, has lived in Lodwar all her life. She says that these days there is much more drought, *'It was not like this before. There used to be a lot more trees growing in this area, which bore fruit for both animals and people. The trees have long since dried out'*. Francis says he does not know why the weather has changed, but that if it continues like this there will be even more difficult times ahead.

Climate change projections indicate that the Turkana region will become more vulnerable to droughts. Although as a whole East Africa may receive slightly more rain by 2030, in the drier, semi-arid areas such as Turkana rainfall will decline, and both will become drier as temperatures rise.<sup>11</sup> 12-year-old



Nangiro Amodoi says he hopes to continue his family's traditional way of life. However, the changing climate threatens the future of the Turkana people.

## 1.2 Food insecurity

Currently, around 850 million people are at risk of hunger around the world (about 13% of the world's population).<sup>12</sup> The ability of people to grow food is highly dependent on temperature and on rainfall patterns, with the vast majority of farmers in developing countries depending on rain-fed agriculture. There is evidence that climate change is already reducing growing seasons in parts of Africa.<sup>13</sup> Many of the farmers that Trócaire works with have found that the weather has become less predictable, which has made it difficult to know when to plant their crops. For the Ngera family in Tharaka, Kenya, the 'long rains' of April 2007 failed, leaving them without a harvest. Speaking in July 2007, Silas Ngera said he felt *"little hope for the October rains, they are getting worse every year"*.

## 1.3 Health

Many diseases are highly sensitive to changing temperatures and precipitation, including diarrhoea, and common vector-borne diseases such as malaria and dengue. The World Health Organisation estimates that climate change is already responsible for over 150,000 deaths each year, primarily through an increase in cases of diarrhoea, malaria and malnutrition, predominantly in developing countries.<sup>14</sup> In addition, there have been increased incidences of deaths from heat waves, floods and droughts.<sup>15</sup>

## 1.4 Disasters

There has been an increase in intense tropical cyclone activity in the North Atlantic over the last 30 years<sup>16</sup>, and almost three times more disasters have been recorded in the last decade compared to the 1970s.<sup>17</sup> Disasters directly impact on peoples' lives, causing deaths, destroying homes and crops and polluting water sources. The number of people affected by storms and floods increased dramatically from 740 million to 2.5 billion people in the last 40 years.<sup>18</sup> These figures reflect a range of factors, not least the fact that more people are living in vulnerable conditions. Worryingly, the trend appears to be accelerating: since 2000 the growth rate in the number of people affected by climate-related disasters has doubled.<sup>19</sup>

### Box 1.2 Extreme weather in Central America

*"The time lapse between floods has shortened from five years to one year. Storms are more and more frequent."*

*Trócaire partner, Fundacion San Alonso Rodriguez, Honduras*

Trócaire has been witnessing the growing intensity of extreme weather in Central America. In October 1998 hurricane Mitch ravaged Central America primarily Honduras and Nicaragua and, to a lesser extent El Salvador and Guatemala. Tropical Storm Katrina 1999 and hurricane Michelle in 2001 caused serious damage in Honduras, although on a far more localised scale than Mitch. A severe drought in 2001 devastated agricultural production in parts of Honduras, Nicaragua, Guatemala and El Salvador. 2005 was an

extraordinarily active hurricane season with Hurricane Stan affecting Guatemala and El Salvador, and Hurricanes Wilma and Beta, and Tropical Storm Gamma affecting Honduras. In September 2007, Hurricane Felix devastated the Caribbean coast of Nicaragua, and also caused significant damage in Honduras.

The devastating impacts of these disasters are a result both of local factors - such as uncontrolled urban expansion and decades of environmental degradation that increase people's vulnerability, and the increasing intensity of these events. As well as direct loss of lives, hurricanes, floods and landslides push people further into poverty by destroying water sources and supply systems as well as homes, crops, livestock and soil.

### **The Figueroa family**

*"We were left without a home, without anything"*

Eugenia Figueroa and her family live in the hamlet El Tular, in the Department of Sonsonate, El Salvador. They live in extreme poverty, on less than one dollar a day. Eugenia's husband rents a small plot of land where he grows maize and sorghum, and what he harvests is used exclusively for the family's consumption. There are days when they have nothing to eat. The family used to live in the lower areas of the El Tular hamlet, but as a consequence of Hurricane Stan in November 2005 the dangers of floods and landslides forced them to leave their home. Eugenia recalls: "when Stan happened, we had finished half a plot of beans and maize and we lost everything because there was too much rain. At that time we had to endure hunger and to buy maize with the little money my husband and my son earned working as day labourers." The variability of the climate and the problems this brings continues to affect them. Eugenia says: *"The rains are not constant and sometimes it rains too much. You plant the maize fields and then it doesn't rain, and the soil cracks, the heat is unbearable, and all this is affecting us a lot. With this problem with the climate we are completely lost."*

### **1.5 Sea level rises - land loss**

Globally, over 200 million people live in coastal floodplains, including one quarter of the population of Bangladesh (about 35 million people).<sup>20</sup> Globally, the sea level has been rising at 1.8mm a year since the 1950s, and at a rate of 3.1mm a year since 1993.<sup>21</sup> Combined with human activities and subsistence, sea-level rise is contributing to the loss of coastal wetlands and mangroves and increasing damage from flooding in many places around the world.<sup>22</sup>

The harmful effects of existing levels of climate change on the most vulnerable communities around the world are already evident. This change is itself an urgent indicator of the need to assist countries cope with these impacts. Predictions of what future impacts are anticipated over the coming decades, however should pose a dire warning of the need to take urgent action to limit as much as possible future levels of climate change.

## 2. ROBBING OR RECLAIMING THE FUTURE?

*“Climate change science identifies 2°C as a potential ‘tipping point’ for long-run catastrophic outcomes. More immediately, it represents a ‘tipping point’ for large scale human development reversals during the 21<sup>st</sup> century”*

UNDP<sup>23</sup>

Average global temperatures have risen by 0.74°C in the last century.<sup>24</sup> If greenhouse gas emissions continue to grow at their current rate, average global temperatures could rise by 2-3°C over the next fifty years, and could eventually exceed 5-6°C by the end of the century.<sup>25</sup> As temperatures rise important ‘tipping points’, such as the disintegration of the West Antarctic ice sheet and the collapse of the Amazon forest may be triggered, resulting in large scale and irreversible changes. This will fuel further ‘runaway’ climate change due to negative feedback loops that accelerate warming. For this reason, limiting rises in global temperatures to 2°C above pre-industrial levels, the widely recognised ‘tipping point’ beyond which global warming becomes increasingly severe and less controllable is essential. The European Union has officially recognised 2°C as the threshold necessary to avoid ‘dangerous’ climate change. Ireland, in the National Climate Change Strategy, states: *“Ireland fully supports the position of the European Union on the urgent need...to limit the increase in global mean average temperature to 2°C above the pre-industrial level.”*<sup>26</sup>

For many of the world’s poorest people, climate change is already dangerous, and for this reason supporting developing countries to cope with current impacts must be central to the response to climate change. Table 2 illustrates that the predicted impacts of climate change beyond 2°C also become progressively worse. These impacts are not inevitable, and with urgent action could be avoided. Consequently, targets for limiting climate change should be aimed at staying as far below the 2°C threshold as possible.

**Table 2. Predicted impacts of Climate Change up to and beyond 2°C**

	Up to 2°C	Beyond 2°C
Water security	<p>In the Andes small glaciers will disappear completely with warming in the range of 0.5–1.5°C, threatening water supplies for around 50 million people.<sup>27</sup></p> <p>By 2050, large swathes of the developing world will experience a decline of 30% or more in water run-off from rainfall. Water availability will be influenced by changes in temperature and the timing of flows.<sup>28</sup> As a result hundreds of millions of people will be exposed to increased water stress. In Africa alone, the population at risk of increased water stress is projected to be between 75-250 million and 350-600 million people by the 2020s and 2050s respectively.<sup>29</sup></p> <p>In Asia, millions of lives will be affected with a predicted strengthening of the summer monsoon as temperatures rise, making it warmer and wetter. Most climate models suggest that the monsoon rainfall patterns will change by 25%-100%. Fluctuations of just over 10% are known to cause severe flooding or drought.<sup>30</sup></p>	<p>In southern Africa and parts of South America rainfall will continue to decline. At 2°C, models predict up to a 30% reduction in water in rivers in these places, with a shocking potential 50% decrease around 4°C. This spells water shortages for millions. One study predicts for a 2–3°C rise, 1–4 billion people will be experiencing growing water shortages.<sup>31</sup></p> <p>The proportion of land area experiencing extreme droughts at any one time could increase from around 3% today, to 8% by 2020 and to 30% by the end of the century.<sup>32</sup> Drought will probably last all year round in most of southern Africa by the time 3°C is reached.</p> <p>At 5°C large glaciers in the Himalayas may have disappeared, affecting a quarter of China's population and hundreds of millions in Asia.<sup>33</sup> Some rivers will dry up completely.</p> <p>At this temperature South Asia, could experience an increase in water flow of 10–20%. An estimated 1–5 billion people in South and East Asia may receive more water. A lot of the extra water will come during the wet season when it is likely to lead to more flooding. It will only be useful in the dry season if it is stored well.<sup>34</sup></p>
Agriculture and food security	<p>Maize is a staple crop for millions in developing countries, but lower yields are predicted right across South America (in every country except Chile and Ecuador).<sup>35</sup></p> <p>Most of Africa is expected to experience decreased crop yields, with rain-fed crop production predicted to fall by up to 50% in some African countries by 2020.<sup>36</sup> In southern Africa crop failure is predicted to be as high as 80%.<sup>37</sup></p>	<p>Despite potential gains at earlier temperature increases, above 3°C, China's agriculture production is likely to be severely undermined and agriculture could become non-viable in several whole areas, for example in parts of southern Africa.<sup>38</sup></p> <p>Once temperatures increase above 3°C, 250–550 million additional people may be at risk of hunger, over half of them in Africa and western Asia.<sup>39</sup></p>
Disasters, Health, and Land	<p>Tropical cyclones (typhoons and hurricanes) are predicted to become more intense as global temperatures rise and higher sea surface temperatures provide more energy to power tropical storms.<sup>40</sup></p> <p>Sea-level rises are predicted to be at least 18-16cm during the 21st century,<sup>41</sup> but this figure is generally regarded as conservative, and continued growth of emissions could well promote a sea-level rise of 1–3 metres, or up to 5 meters if the Greenland and West Antarctic ice sheets break-up unexpectedly rapidly.<sup>42</sup></p> <p>South and East Asia are particularly vulnerable to sea-level rise because of their large coastal populations in low-lying areas, notably Vietnam, Bangladesh and parts of China and India. Millions will be at risk around the coastline of Africa, particularly in the Nile Delta and along the west coast. Up to 10 million more people could be affected by coastal flooding each year in the 1.5–2.5°C rise range.<sup>43</sup></p>	<p>A 2°C rise in temperature could see 40–60 million more people exposed to malaria in Africa, a figure that increases to 70–80 million at temperatures around 4°C, based on the current level of control efforts.<sup>44</sup> There may also be places where there will be a decrease in malaria prevalence, but in all scenarios Africa sees more people exposed. At 4°C an extra 1.5–2.5 billion people could be exposed to dengue fever because of climate change.<sup>45</sup> These and other health effects (for example, malnutrition as a result of decreasing food security) will lead to immense increased suffering.</p> <p>The number of people potentially affected in developing countries at different levels of sea-level rise as melting of ice-sheets accelerates are projected to be: 1 metre 56 million people, 2 metres 89 million people, 5 metres 245 million people.<sup>46</sup></p>

Source: Adapted from Tearfund et. al. (2007)

### 3. TACKLING CLIMATE INJUSTICE

Climate change is an issue of social and environmental injustice. Rich countries are responsible for causing it based on historical as well as current global emissions, and yet the poorest people are hit the hardest. Justice must be at the heart of the response to climate change. Rich countries must take the lead in tackling both the causes and the consequences. In recognition of developing countries' low level of historical responsibility for causing climate change and high levels of poverty, their right to economic and social development must be safeguarded.

World governments have recognised the primary responsibility of rich countries in both tackling the causes and consequences of climate change. The objective of the United Nations Framework Convention on Climate Change (UNFCCC), established after the Rio Summit in 1992, and ratified by nearly all governments, including the US, is to reduce greenhouse gas concentrations to levels that “*prevent dangerous anthropogenic [manmade] interference with the climate system*”, based on the “*common but differentiated*” responsibilities of each country. It explicitly lays out that “*developed country parties should take the lead in combating climate change and the adverse effects thereof*”. In the language of climate change the two approaches are known as mitigation and adaptation.

#### Box 3.1: Defining Mitigation and Adaptation

**Mitigation:** interventions to reduce greenhouse gas emissions or enhance carbon sinks

**Adaptation:** responses that increase the ability of human and ecological systems to manage or cope with climate change

A just response to climate change means tackling both effectively and equitably. The international community is currently failing to do enough on both counts.

#### 3.1 Tackling the causes: MITIGATION

Tackling the causes of climate change is the only way to avoid the worst impacts of climate change. If it is not addressed, climate change would overwhelm human capacity to adapt to its impacts.

The latest report by the Intergovernmental Panel on Climate Change, the principal scientific authority on climate change, has confirmed that climate change is unequivocal and a result of human activities, specifically the accumulation of greenhouse gases released into the atmosphere. Preventing the worst impacts of climate change requires dramatic reductions in the release of greenhouse gases, primarily carbon dioxide, into the atmosphere.

##### 3.1.1 Keeping below a 2°C threshold

At the G8 Summit in Germany in July 2007, G8 members supported global emissions reductions of 50 per cent by 2050. However, this target only gives a

fifty-fifty chance of keeping to the 2°C limit, odds that even proponents of the target recognise as less than reassuring. Modelling by Baer and Mastrandrea estimates that a global emissions reduction of 80% relative to 1990 levels by 2050 reduces the risk of overshooting the 2°C threshold to 9-26%.<sup>47</sup> While no pathway guarantees staying within 'safe' levels of climate change, taking the threat seriously requires setting a target that reduces the risk as much as possible.

### 3.1.2 Approaching reductions based on equity

As a global problem, all countries have a common and shared responsibility to ensure global temperatures do not rise above 2°C. Rich industrialised countries however bear particular responsibility for acting first and most. Current greenhouse gas concentrations in the atmosphere are a result of past as well as current emissions. Rich countries have contributed the most to global stocks of carbon – they are responsible for 7 out of every 10 tonnes of carbon dioxide emitted since the start of the industrial era,<sup>48</sup> and remain high. While the contribution of developing countries to global emissions has grown, notably China and India are in the top five of emitters, developing countries bear a low historical responsibility for stocks of greenhouse gases in the atmosphere. Collectively, least developed countries account for just 0.5% of current global emissions.<sup>49</sup>

**Table 3. Per capita Emissions of Carbon Dioxide (C02)**

<b>Country</b>	<b>Per Capita C02 emissions (t C02) 2004</b>
US	20.6
Ireland	10.5
United Kingdom	9.8
China	3.8
India	1.2
Uganda	0.1

Source: UNDP (2007)

The inequitable distribution of emissions becomes clearer on a per capita basis: each person in Ireland for example is responsible for emitting 10.5 tonnes of carbon dioxide a year – a hundred times more than the average person living in Uganda. The average US citizen, at 20.6 tonnes per person a year emits over five times more than the average person in China, at 3.8 tonnes.

A just response to climate change requires rich countries to lead and bear their fair share of emissions reductions, based on historical responsibility for past emissions, accumulated wealth that provides greater capacity to act and the universally recognised principle that the polluter pays. Crucially, and in light of low historical responsibility and high levels of poverty, the rights of developing countries to develop must be guaranteed. The Greenhouse Development Rights Framework<sup>50</sup> provides a useful starting point for including development equity within the climate protection agenda.

### 3.1.3 Achieving the necessary cuts

Avoiding dangerous climate change will be challenging but is both achievable and economically preferable. The influential Stern Report on the economics of climate change concluded that it would be up to twenty times cheaper to tackle the causes of climate change now than to deal with the impacts.<sup>51</sup> The real challenge for avoiding dangerous climate change is political will. Agreeing a successor to the Kyoto Protocol (which expires in 2012) that sets the necessary targets to keep temperature rises as far below 2°C as possible will be one marker of political will. At the UN climate change negotiations in December 2007, world leaders committed to negotiations to reach an agreement by 2009. This 'Bali Roadmap', however fails to include reference to specific targets, thereby amounting to a roadmap with no destination or signposts. Governments must show leadership over the next 2 years in order to ensure that an agreement is reached by 2009 that commits to sufficiently stringent targets to stay within the 2 degrees threshold.

An effective response is about action as well as targets. Ireland's record to date has not been encouraging. Under the Kyoto Protocol, Ireland must limit the growth in its emissions to 13% above 1990 levels over the 2008-2012 period. And as part of the effort-sharing proposal announced by the European Commission in January 2008, Ireland may be required to reduce its emissions by 20% of 2005 levels by 2020 to contribute towards the EU wide emissions reduction target of 20-30% below 1990 levels by 2020.

However to date, Ireland has failed to curb its greenhouse gas emissions. Figures from the Environmental Protection Agency reveal that Ireland is polluting at almost twice the level of its Kyoto target, at 24.5% above 1990 levels.<sup>52</sup> To play its fair share in avoiding dangerous climate change, Ireland must take immediate steps to reduce emissions in line with Kyoto commitments, and to lay the groundwork for more dramatic cuts that will be required after 2012. Annual 3% year-on-year reductions, as proposed in the Programme for Government, provides a good starting point for Ireland to take the necessary urgent steps.

## 3.2 Dealing with the impacts: ADAPTATION

In developing countries, people are adapting everyday, whether this means walking an extra mile to fetch water as streams and wells dry up; or adapting farming practices to changes in the climate. This is because adaptation is not a choice for vulnerable communities in developing countries as the impacts of climate change affect day-to-day life. The need for adaptation is set to continue over the next few decades due to inevitable rises of at least a further 1-1.8°C as a result of emissions to date. Adaptation is about maintaining a livelihood in a changing and increasingly unpredictable context and building resilience to shocks such as severe weather, floods and droughts. It is about reducing vulnerability to the risks people face and building capacity and resilience to face future changes.

### 3.2.1 Adaptation strategies at different levels

Adaptation activities farmers have already begun to engage in include activities to facilitate just 'getting by', such as storing fodder and borrowing money from relatives, to longer term adaptation, such as planting fast-maturing or different types of crops, eating wild fruits, collecting wild seeds, selling livestock, seeking paid work in town, and trying to start up businesses to generate money.<sup>53</sup> Building on strategies communities develop themselves is an important element of local resilience and capacity to cope with future climate change. For example, Trócaire partners assist farmers to diversify their activities, both on-farm through growing a wider range of crops, including drought resistant varieties, and by promoting off-farm diversification such as engaging in processing and marketing of produce. Reducing risk to more extreme weather such as hurricanes or flooding is also adaptation.

Adaptation strategies also take place at the national level, as governments invest for example in coastal protection, or to 'climate-proof' national infrastructure, whether transport, or health, or water. Investing in infrastructure and institutions that are responsive to the needs of the poor is an important part of enabling vulnerable households and communities to withstand the shocks posed by climate change. This is because infrastructures and institutions determine the relationship between for example, water availability on the one hand and whether or not a country experiences water insecurity on the other. For example while Indonesia loses an estimated 25,000 lives a year as a result of drought-related problems – Australia, with a similar drought risk exposure, loses none.<sup>54</sup> Investing in adaptive capacity can ensure that although shocks and challenges to developing countries may increase, communities have greater resilience to withstand them.

The National Adaptation Programmes of Action (NAPAs), papers drawn up by the Least Developed Country (LDC) members of the UNFCCC identify the most urgent adaptation activities that are required in some of the poorest countries in the world. To date, twenty-eight LDCs have submitted NAPAs, identifying health, agriculture and water as the highest priority sectors.<sup>55</sup> Types of projects proposed include improving climate monitoring, improving cultivation methods, introducing drought-resistant cereals and reforestation to improve soil fertility and reduce flood risk.

### **BOX 3.2 Trócaire: building adaptive capacity**

Trócaire's sustainable livelihoods and disaster risk reduction programmes, aim to build resilience of communities around the world, including:

**Living in harmony with the semi-arid region in Brazil:** Trócaire partner CEPFS has been part of a group of organisations pioneering long-term approaches to combating drought in the semi-arid area of northeast Brazil. The approach focuses on promoting appropriate technologies, including easy to build family cisterns that provide storage facilities for good quality water and drought resistant crops. Involvement in cistern building developed community awareness of what they can achieve with scarce resources and to engage with authorities to promote better public policies. CEPFS has also worked to



rescue and revive traditional methods of living in harmony with the semi-arid environment, through supporting and promoting Community Seed Banks whereby groups contribute a variety of seeds to be used by the community for future planting, thereby building greater resilience to climate variability.

**Diversifying livelihoods in Malawi:** Malawi is a densely populated African country, and 80% of the population are engaged in agriculture and dependent on a single short rainy season. Both drought and floods are major contributors to food insecurity. During the food shortages of 2005/6, 4.8 million people, 40% of the population were in need of emergency food aid. Chikwawa is the poorest diocese in Malawi, located in a valley where temperatures can climb above 40 degrees, rains are unreliable and when they do come, floods are common. Trócaire partner CADECOM encourages crop diversification to reduce reliance on a single rainy season, promotes use of livestock to vary the sources of food and income available to households and promotes simple irrigation techniques for improved agricultural output.

**Reducing vulnerability to floods and landslides in Honduras:** Colón and Olancho are two of the most vulnerable areas in Honduras to floods and landslides. During the last three months of 2005, three storms provoked flooding that forced over 25,000 people from their homes each time within this period. Trócaire partner, Centro Tecnico San Alonso Rodriguez (CTSAR) works to strengthen the capacity of communities to prepare for and respond to disasters, through training community emergency committees and designing and broadcasting radio programmes.

**Reducing vulnerability to disasters in Indonesia:** Indonesia is vulnerable to disasters, including tropical country monsoon events leading to severe floods, and storm surges in coastal areas. Trócaire partners provide assistance to communities to plant vegetation such as mangroves to provide protection from waves and storms and to regenerate coastal areas.

Adaptation is already happening – national priority strategies have been drawn up in many countries, and at the local level communities are responding to the challenges of a changing climate. But there are limits to how far poor people and countries can adapt without greater support.

### 3.2.2 Covering the costs of adaptation – who should pay and how much?

Rich countries are responsible for causing climate change as a result of their historical and current high greenhouse gas emissions. Rich country governments have accepted that they are responsible for assisting developing countries adapt to the impacts of climate change: *“The developed country Parties...shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.”*<sup>56</sup>

The exact costs of adaptation are difficult to assess, as adaptation that takes place at a household level is difficult to measure and to translate into a monetary value. How much adaptation will be needed in the future, depends

on how successfully we have reduced greenhouse gases, and it is difficult to predict specific impacts for specific locations. However, it is clear from assessments to date that costs of adaptation will run into tens of billions of US dollars a year. The World Bank has estimated that the added costs of 'climate proofing' new investments in developing countries will cost \$10-40 billion a year.<sup>57</sup> Taking into account costs of additional investment and financial flows to cover adaptation in areas including agriculture, forestry, fisheries, water supply, and treating increased cases of water borne diseases, malnutrition and malaria due to climate change, the UNFCCC estimates that by 2030 \$39-171 billion will be needed globally, of which \$28-67 billion will be for developing countries.<sup>58</sup> Oxfam have estimated the costs of adaptation to be a minimum of 50 billion annually, while Christian Aid has put the cost at \$100 billion a year and higher, if greenhouse gases are not cut rapidly.<sup>59</sup> As noted above, estimating the costs of adaptation are imprecise, but it is important to identify concrete figures in order to make progress towards ensuring funding for adaptation meets the scale of the need. On the basis of the above estimates, Trócaire believes that at least \$50 billion per year is needed for adaptation in developing countries, a figure that will rise if emissions are not urgently cut.

Comparing these figures to the aid budget gives an indication of their scale. The cost of only the priority adaptation actions identified by Lesotho in its NAPA amounts to \$13.07 million – this is approximately equal to the total bilateral aid to Lesotho by Irish Aid in 2005.<sup>60</sup> Global aid flows that currently amount to \$5.2 billion a year for water infrastructure would need to rise by 150 percent by 2030 purely to meet the additional requirements due to climate change in developing countries.<sup>61</sup>

### 3.2.3 Adaptation funding to date

Under the UNFCCC a number of funds have been established to fund adaptation projects, but current funds fall far short of the predicted costs. The Adaptation Fund is funded by a 2% levy on sales of carbon credits through the Clean Development Mechanism of the Kyoto Protocol, and can be topped up by contributions by rich countries. Although established in 2001, this fund has yet to fund a single project. Two other adaptation funds – the Least Developed Countries Fund, and the Special Climate Change Fund have to date received pledges of \$182 million, including \$5 million from Ireland and \$38m from the UK. Outside of the UNFCCC, adaptation funds can be given bilaterally, and are estimated to have amounted to \$100 million dollars a year between 2000-2003. These figures amount to only a fraction of the tens of billions of dollars that will be needed to meet the scale of the challenge.

These figures are also misleading, as in the majority of cases funds pledged to adaptation funds have been counted as official development assistance (ODA). ODA is for essential development work, and the target of 0.7% of GDP that Ireland and the UK have committed to achieving were agreed on the basis of the scale of the development challenge without factoring in the costs of adaptation to climate change. Funding adaptation out of the aid budget therefore risks diverting funding from other essential work. Funds for

adaptation should be given by way of compensation for damages caused, and be additional to ODA.

Current levels of funding for adaptation fall completely short of what is required. Even including scaling up the operation of the adaptation fund in the future, the UNFCCC has concluded that the mechanisms and sources of financing will be insufficient.<sup>62</sup> It is clear that the costs of adaptation are significantly higher than current mechanisms are expected to deliver.

#### 4. RECOMMENDATIONS

Vulnerable countries and communities are already feeling the effects of climate change. If greenhouse gas emissions continue to grow at their current rate, average global temperatures could rise by 2-3°C over the next fifty years, and could eventually exceed 5-6°C by the end of the century,<sup>63</sup> with devastating consequences. Even if we freeze greenhouse gas emissions at current levels we could see a further rise of at least 1.8°C in this century alone.<sup>64</sup>

The **international community** is failing to do enough to tackle the causes and consequences of climate change. Those who created the problem, and have the ability to pay should foot the bill. Rich governments, therefore, must take urgent action to do their fair share on mitigation and adaptation:

Mitigation:

- Negotiate an international agreement that will keep global temperature rises to as far below 2°C as possible
- Cognisant of equity and historical responsibility, rich countries should agree to reduce their greenhouse gas emissions by 80% below 1990 levels by 2050

Adaptation:

- Ensure that vulnerable communities in developing countries have the capacity to cope with the impacts of current and future climate change by providing adaptation financing and transfer of technology
- Adaptation funding must cover the full costs of adaptation, at least US \$50 billion a year
- Adaptation funding should be additional to ODA, by way of compensation
- Adaptation mechanisms must operate clearly and transparently, and pay sufficient attention to how they will impact differently on men and women
- Those who are intended beneficiaries should have a voice in adaptation mechanisms
- Adaptation mechanisms must be operational as soon as possible, and must avoid unnecessarily burdensome processes that may limit the ability of the least developed countries to access funding
- Innovative forms of financing that could assist in generating the necessary funds for adaptation should be explored

In **Ireland**, the government must:

- Ensure that at the international level the above commitments on adaptation and mitigation are made
- Take urgent action to reduce emissions
- Advance legislation to enshrine into law Ireland's commitment to reduce greenhouse gas emissions by 3% per year
- Recognise funding for adaptation to developing countries as compensation, and not count it against the aid budget

In the **UK**, the government must:

- Ensure that at the international level the above commitments on adaptation and mitigation are made
- Increase emission reduction targets in the Climate Protection Bill from 60% below 1990 levels by 2050 to 80% below 1990 levels by 2050
- Recognise funding for adaptation to developing countries as compensation, and not count it against the aid budget

**Trócaire:** Playing our part:

Inspired by Catholic Social Teaching, Trócaire works for a just and sustainable world for all. We reaffirm our objective to reduce poverty and work for social justice, including environmental justice, and commit to:

- Assisting vulnerable communities in developing countries to adapt to the impacts of climate change through our programmes on the ground
- Demanding justice from the international community by advocating and campaigning for the Irish and UK governments to do their fair share to tackle the causes and consequences of climate change
- Addressing our own contributions to climate change, by taking action to reduce our carbon footprint.

## NOTES & REFERENCES:

### Notes:

---

- <sup>1</sup> IPCC (2007)b
- <sup>2</sup> Stern et al (2006)
- <sup>3</sup> Interview with Trocaire, July 2007
- <sup>4</sup> Speaking at the opening of a UNFCCC meeting in Vienna,  
[http://unfccc.int/files/news/press\\_room/press\\_releases\\_and\\_advisories/application/pdf/20070827\\_vienna\\_opening\\_press\\_release.pdf](http://unfccc.int/files/news/press_room/press_releases_and_advisories/application/pdf/20070827_vienna_opening_press_release.pdf)
- <sup>5</sup> El Niño and La Niña are phenomenon characterised by temperature fluctuations in surface waters of the tropical Eastern Pacific Ocean that have profound effects on weather systems in the southern hemisphere. Impacts associated with El Nino and La Nina phenomenon include wetter conditions and flooding in South America and East Africa and drier conditions and drought in South East Asia and Southern Africa.
- <sup>6</sup> IPCC (2007)b
- <sup>7</sup> UNDP (2006)
- <sup>8</sup> *ibid.*
- <sup>9</sup> Grey, D. and Sadoff, C. W., (2006)
- <sup>10</sup> World Bank (2004) and World Bank (2006)a
- <sup>11</sup> UNDP (2006)
- <sup>12</sup> FAOSTAT, [http://www.fao.org/faostat/foodsecurity/index\\_en.htm](http://www.fao.org/faostat/foodsecurity/index_en.htm)
- <sup>13</sup> IPCC (2007)a
- <sup>14</sup> World Health Organisation (2006)
- <sup>15</sup> IPCC (2007)a
- <sup>16</sup> IPCC (2007)b
- <sup>17</sup> UNISDR (website), <http://www.unisdr.org/disaster-statistics/occurrence-trends-century.htm>
- <sup>18</sup> Red Cross (2002, 2003)
- <sup>19</sup> UNDP (2006)
- <sup>20</sup> Stern et al (2006)
- <sup>21</sup> IPCC (2007)b
- <sup>22</sup> IPCC (2007)a
- <sup>23</sup> UNDP (2007)
- <sup>24</sup> IPCC (2007)b
- <sup>25</sup> Stern et al (2006)
- <sup>26</sup> Department of Environment, Heritage and Local Government (2007)
- <sup>27</sup> Stern et al (2006)
- <sup>28</sup> UNDP (2006)
- <sup>29</sup> IPCC (2007)a
- <sup>30</sup> UNDP (2006)
- <sup>31</sup> Stern et al (2006)
- <sup>32</sup> Burke et al (2006)
- <sup>33</sup> Stern et al (2006)
- <sup>34</sup> *ibid.*
- <sup>35</sup> Lynas M (2007)
- <sup>36</sup> IPCC (2007)a
- <sup>37</sup> DEFRA (2006)
- <sup>38</sup> Stern et al (2006)
- <sup>39</sup> *ibid.*
- <sup>40</sup> IPCC (2007)
- <sup>41</sup> *ibid.*
- <sup>42</sup> Dasgupta S et al (2007)
- <sup>43</sup> Stern et al (2006)
- <sup>44</sup> *ibid.*
- <sup>45</sup> *ibid.*
- <sup>46</sup> Dasgupta S et al (2007)
- <sup>47</sup> Baer and Mastrandrea (2006)
- <sup>48</sup> UNDP (2007)

- 
- <sup>49</sup> World Bank Development Indicators, <http://www.worldbank.org> (accessed 14 January 2008)
- <sup>50</sup> Baer, P., T. Athanasiou and S. Kartha (2007)
- <sup>51</sup> Stern et al (2006)
- <sup>52</sup> Environmental Protection Agency (2007)
- <sup>53</sup> Thomas, D. *et. al* (2005)
- <sup>54</sup> UNDP (2006)
- <sup>55</sup> UNFCCC (website) <http://unfccc.int/adaptation/napas/items/2679.php> (accessed 11 January 2008)
- <sup>56</sup> Article 4 of the UNFCCC, (website) [http://unfccc.int/essential\\_background/convention/background/items/1349.php](http://unfccc.int/essential_background/convention/background/items/1349.php)
- <sup>57</sup> World Bank (2006)b
- <sup>58</sup> UNFCCC (2007)
- <sup>59</sup> Oxfam (2007)
- <sup>60</sup> UNFCCC (2007) and Irish Aid (website), <http://www.irishaid.gov.ie/lesotho.asp>
- <sup>61</sup> UNFCCC (2007)
- <sup>62</sup> The UNFCCC estimates that during the Kyoto commitment period 2008-2012, the Adaptation fund will receive USD 80-300 million a year, and assuming a similar arrangement in a post 2012 agreement, the level of funding could by 2030 be between 100-500 (low demand for carbon credits) and 1-5 billion (assuming high demand for carbon credits). Other funds set up under the UNFCCC and managed by the GEF have provided 110 million for adaptation projects since 2005.
- <sup>63</sup> Stern et al (2006)
- <sup>64</sup> *ibid.*

## References:

Baer, P., T. Athanasiou and S. Kartha (2007) *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*

Baer and Mastrandrea (2006) *High Stakes: Designing emissions pathways to reduce the risk of dangerous climate change*, Institute of Public Policy Research

Burke et al (2006) 'Modelling the recent evolution of global drought and protections for the 21<sup>st</sup> century with the Hadley Centre climate model', *Journal of Hydrometeorology*, 7: 1113-1125

Dasgupta S et al (2007) "The Impact of Sea Level rise on Developing Countries: A Comparative Analysis", *World Bank Policy Research Working Paper* (WPS4136)

DEFRA (2006) *Avoiding Dangerous Climate Change*, <http://www.defra.gov.uk/environment/climatechange/research/dangerous-cc/index.htm>

Department of Environment, Heritage and Local Government (2007), *Ireland National Climate Change Strategy 2007-2012*

Environmental Protection Agency (2007), *Ireland's Emissions Of Greenhouse Gases For The Period 1990-2005* <http://www.epa.ie/downloads/pubs/air/airemissions/name,12040,en.html>

---

Grey, D. and Sadoff, C. W., (2006) "Water for Growth and Development" in *Thematic Documents of the IV World Water Forum*, Comision Nacional del Agua, Mexico City

IPCC (2007)a *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policy Makers*

IPCC (2007)b, *Summary for Policymakers of the Synthesis Report of the IPCC Fourth Assessment Report*

Lynas M (2007) *Six Degrees: Our Future on a Hotter Planet*, Fourth Estate, March 2007

Oxfam (2007) "Adapting to climate change: what's needed in poor countries and who should pay", *Oxfam Briefing Paper 104* and *Global war chest needed to fight impact of climate change on poor*, Christian Aid, April 2006

Red Cross (2002, 2003) *World Disasters Reports 2002 and 2003*

Stern et al (2006) *Stern Review of the Economics of Climate Change*, HM Treasury  
Interview with Trocaire, July 2007

Tearfund, Christian Aid, Practical Action, Oxfam (2007), *"Two Degrees, One Chance: the urgent need to curb global warming"*

Thomas, D., H. Osbahr, C. Twyman, N. Adger, and B. Hewitson (2005) 'ADAPTIVE: Adaptations to Climate Change among Natural Resource-Dependent Societies in the Developing World: across the Southern African Climate Gradient', *Tyndall Centre for Climate Change Research Technical Report No. 35*, available at:  
[http://www.tyndall.ac.uk/research/theme3/final\\_reports/2\\_31.pdf](http://www.tyndall.ac.uk/research/theme3/final_reports/2_31.pdf) (accessed 22 November 2007)

UNDP (2006), "Beyond scarcity: Power, poverty and the global water crisis" *Human Development Report 2006*  
*ibid.*

UNDP (2007) "Fighting climate change: Human solidarity in a divided world" *Human Development Report 2007/2008*

UNFCCC (2007) "Analysis of existing and planned investment and financial flows relevant to the development of effective and appropriate international response to climate change"  
([http://unfccc.int/files/cooperation\\_and\\_support/financial\\_mechanism/application/pdf/background\\_paper.pdf](http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/background_paper.pdf))

---

World Bank (2004) *Towards a Water Secure Kenya: water resources sector memorandum*, Washington DC

World Bank (2006)a *Hazards of Nature, Risks to Development. An IEG Evaluation of World Bank Assistance for Natural Disasters Independent Evaluation Group*, Washington DC

World Bank (2006)b *Clean Energy and Development: Towards an Investment Framework*, World Bank Environmentally and Socially Sustainable Development and Infrastructure Vice Presidencies, Washington DC: World Bank.

World Health Organisation (2006) WHO/UNEP Health and Environment Linkages (website), <http://www.who.int/heli/risks/climate/climatechange>