TRULY INCONVENIENT

Tackling poverty and climate change at once

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Introduction

'Countries will be asked to meet different requirements based upon their historical share or contribution to the problem and their relative ability to carry the burden of change. This precedent is well established in international law, and there is no other way to do it.'

Al Gore, former US vice president[1]

Imagine a world in which both the scandal of global poverty and the threat of climate change were taken seriously. In such a world, what action would be required to deliver human development, economic opportunity and dignity to poor people while at the same time reducing the atmospheric concentration of greenhouse gases and holding global warming below 2 degrees Celsius?

This briefing tackles the issue head on. Nations large and small, rich and poor will meet in December 2007 in Bali, Indonesia. Barring political catastrophe, they will launch formal negotiations for a new deal on climate change with the aim of making a seamless transition in 2012 from the first commitment period of Kyoto to the next phase.

There is no shortage of evidence; a rapidly expanding body of climate science points towards the need for ever more urgent action. The UN's Intergovernmental Panel on Climate Change has brought this together in its Fourth Assessment Report, clearing the way for politicians to start confronting what is inescapably true; that greenhouse gas emissions have to be cut rapidly.

There are many truths in the climate change debate – almost all of them inconvenient. But perhaps the least convenient is that it is no longer possible to stay below 2°C without an actual cut (over current levels[2]), rather than a lower rate of increase, in the emissions of nations yet to develop. At the same time it is unacceptable to constrain these nations' development while hundreds of millions of people remain poor.

Clearly within the broad category of 'developing' countries, there are differences in levels of development as significant as there are between this category as a whole and the industrialised world. This too must be taken into account, with the poorest and least developed nations largely absolved from any obligations.

Also, as the United Nations Environment Programme's recent Global Environment Outlook (GEO 4) suggests, unprecedented levels of economic growth have pushed the planet to the point of destitution. At the same time, while humans in general are living longer, healthier and better-educated lives, there are still staggering levels of global poverty. It is beyond the scope of this briefing, but quite clearly a debate needs to be had about the very nature of development.

However, it is Christian Aid's view that an international agreement will be measured not only according to its success in climate protection but also its relevance to poor people. Unless climate and development are tackled concurrently it is hard to see how any useful agreement will be reached, since developing country governments will be reluctant to sacrifice economic performance in order to cut carbon emissions. And yet cut they must.

The US, on the other hand, will argue that it cannot countenance mid-century reduction targets of 80 or 90 per cent unless an increasingly competitive China and India accept hard targets of their own. Herein lies the impasse at the heart of the climate crisis. The industrialised world; largely responsible and with huge wealth generated by centuries of access to cheap, polluting energy. The developing world; rapidly becoming part of the problem but still home to 2.6 billion people whose income is less than US$2 per day.

In the meantime – with every passing, wasted day – those same people are feeling the impact of an already changing climate. The damage already done by increasingly intense industrialisation is starting to pick off the most vulnerable communities on the planet.

Using the Greenhouse Development Rights framework, first proposed by US-based EcoEquity and developed now in collaboration with Christian Aid, this briefing proposes that an emergency programme is now needed. This should have at its heart three key aims:

1. Limiting global warming below 2°C.
2. Sharing out of the economic burden of staying below 2°C according to responsibility for climate change and capability to deal with the costs of mitigation.
3. A similarly equitable sharing out of the burden of adapting to the damage already done.

With these aims in mind, Christian Aid is calling on industrialised nations, especially the UK, its European neighbours and the USA, to accept a fair share of the burden of global cuts in greenhouse gases, in addition to their domestic cuts. This would reflect their historical responsibility for the climate crisis and existing capability to cover its costs and at the same time allow poorer nations to focus their resources on sustainable development. In effect, nations that have grown rich in part by polluting without facing the costs of doing so – a subsidy by any other name – must now repay their carbon debt.

Putting an actual figure on the likely costs of mitigating emissions and adapting to already inevitable climate change is notoriously difficult.[3] But using the Greenhouse Development Rights framework's responsibility and capability indicator, it is possible to suggest how these costs – whatever they turn out to be – should be shared out fairly and transparently.[4]

According to this logic, the UK, which currently emits 2.13 per cent of the global greenhouse gas emissions, would, because of its wealth and historical emissions, have to pick up a much larger 4.3 per cent of the international costs of mitigation and adaptation. It is clear from this that even if the UK were to eliminate its domestic emissions entirely, it would not meet its global obligation. This might at face value seem harsh, but the UK's economy is the world's fifth largest[5] and the money that flows through the City of London finances up to 15 per cent of global emissions.[6]

The 27 countries in the EU (27) would have a 26.6 per cent slice, whereas a 34.3 per cent allocation would go to the US. India and China, because of their low levels of human development and low per capita wealth, would have a 0.3 and 7.0 per cent share of the burden respectively.

Sir Nicholas Stern argued that spending one per cent of Gross World Product (GWP – the annual production of the world economy) would save at least five per cent in the long term. However, Stern's argument is based on a stabilisation goal as high as 550 parts of CO_2 and its equivalents per million of atmosphere (PPM of CO_2e). This briefing suggests that to limit the risk of exceeding 2°C of global warming, atmospheric concentration must peak at only 450ppm CO_2e and then decline by 2100 to 400ppm CO_2e. Thus Stern's economic projections may underestimate the cost.

However, at Stern's one per cent of GWP (2005), the global mitigation and adaptation cost would be US$617 billion. Therefore, the UK's share of this would be an annual sum of US$26 billion (£12.5 billion), which is significantly less than half its military budget (currently US$66 billion). The EU (all 27 countries, including the UK) would be required to pay US$164 billion per annum and the US would face an annual bill of US$212 billion. Were costs higher, say two per cent of GWP, then these national bills would increase proportionately.

£12.5 billion or £25 billion per annum as the UK's bill for meeting its international obligations on climate change is clearly a very significant sum of money. It is, however, a relatively small sum compared to the nation's overall public expenditure, which in 2007 is expected to be £587 billion.[7] It is also significantly smaller than the sum of money the UK expects to spend on its military (£32 billion) or on servicing public debt (£30 billion) in 2007.

What is beyond the scope of this briefing or, indeed, most current thinking, is to speculate as to precisely how such payments would either be collected or distributed. But a global responsibility and capability index could be used to allocate emissions rights for a carbon-trading system. Equally, such a tool could suggest a tax-based means of collecting revenue. This could be designed at the national level as a progressive consumption tax with the heaviest levies falling on the highest emitting, non-essential items. There is probably no single solution.

Indeed, the responsibility and capability concept could also be applied to the national level in order to address the particularly vexatious issue of wealth and consumption inequality within nations. As well as increasing internationally, the gap between rich and poor is increasing rapidly in many regions of the world and especially, although not exclusively, in the rapidly growing developing nations.

What is tragically true and hugely inconvenient is that climate change is now a more costly problem to fix than it was in 1992, when the potential for catastrophe was so clearly identified and spelled out at the Rio Earth Summit. Since then, political inertia and unprecedented economic growth have combined to ensure that the crisis has deepened considerably. If politicians and business leaders are now prepared to back up their increasingly stark rhetoric with proportionate action, then, as this briefing and the GDRs approach itself spell out, the global response is likely to be neither cheap nor easy to negotiate. But the costs of failure will be unacceptable.

The reality of climate change is singular and pressing; for poor and wealthy alike, the continued drenching of the world's atmosphere in carbon must be stopped. The fact that there are both rich and poor people in the world – and many more of the latter than the former – suggests that the burden of doing so must be shared out fairly. It is not conceivable to ask poor people to pay to solve a problem created by the wealthy, at least until they, too, have the ability to pay and, in fact, it is not possible to solve the problem unless this is made explicit in a global new deal.

1. STAYING BELOW 2 DEGREES: THE CHALLENGE

In the international negotiations on climate change there are three important variables. These are: the burden placed on the climate system through the quantity of greenhouse gases emitted henceforth; the burden placed upon industrialised countries of cutting those emissions; and the development of non-industrialised countries.

This section deals with the first of these three. It suggests that while there is little certainty in the predictions made of the impact on global temperature of further increases in emissions, what is certain is that the aim of staying below 2°C of warming – as far below as possible – is non-negotiable. Christian Aid explicitly supports this aim, as do many of our partner organisations in the UK climate movement.[8]

For millions of the world's poorest people, those on whose behalf Christian Aid advocates, 'safe' levels of climate change have already been exceeded and international efforts must be ramped up to support the affected communities, which is why any mechanism must deal explicitly with adaptation. But above 2°C the impacts will become progressively less manageable, perhaps uncontrollable.

As Christian Aid, Tearfund, Oxfam and Practical Action said jointly in a recent publication *Two Degrees, One Chance*:

> *'Once temperature increase rises above 2°C, up to 4 billion people could be experiencing growing water shortages. Agriculture will become non-viable in parts of the world and millions will be at risk of hunger. This rise in temperature could see 40-60 million more people exposed to malaria in Africa.'*

This is not a sensationalist vision of apocalypse, but the increasingly consensual view of climate scientists, the main body of whose research is summarised in the UN Intergovernmental Panel on Climate Change's Fourth Assessment Report.[9] More starkly, James Hansen, a leading physicist and the director of NASA's Goddard Institute for Space Studies, says that above 2°C of warming we would experience an entirely different world:

> *'If we go back to the time when the Earth was two or three degrees Celsius warmer, that's about three million years ago, sea level was about 25 metres higher, so that tells us we had better keep additional warming (current warming is around 0.8 degrees) less than about one degree.'*[10]

So while adaptation is already and will remain of critical importance to any agency seeking to support poor communities as they strive for dignity and development, mitigation – the cutting of harmful greenhouse gas emissions – must be viewed as the primary endeavour in climate change negotiations. It must also be seen as the most honestly pro-poor climate policy. Above 2°C of warming, any notion of development rather than merely a process of damage limitation will be lost. In a post-2°C world, even damage limitation may have Canute-like qualities.

It is in this context that Christian Aid wholeheartedly backs efforts to stay below 2°C, while accepting all that this aim implies. The ranges of probability offered by the modelling of emissions scenarios already undertaken suggest that a positively heroic, but not impossible, effort is now required to stay below two degrees.

The forecasts for the economic cost of climate change in Sir Nicholas Stern's review are based on stabilising emissions at 500 to 550 parts of CO_2 and its equivalents in the atmosphere (ppm CO_2e).[2] But the narrative in his report draws on a wide range of studies and concludes that this level – an effective doubling of CO_2 over pre-industrial levels – carries an unacceptably high risk of exceeding 2°C of global warming.[11]

Throughout the review, Stern considers the implications of stabilising within a range between 450 and 550ppm CO_2e. But even at 450ppm stabilisation, the literature suggests there might be a risk in excess of 50 per cent of exceeding two degrees. These are not good odds.

The recent G8 summit in Germany concluded with the EU's G8 members, plus Japan and Canada supporting global emissions cuts of 50 per cent by 2050.[12] But even this may be insufficient as it could similarly carry a 50 per cent risk of failure if the aim of such a target is to remain below 2°C. The EU, although not other G8 countries, is a subscriber to this aspiration.

A serious attempt to keep global warming below 2°C would require an emissions trajectory that would maintain consistent reductions throughout the first half of this century in order to reduce concentration to 400ppm or less by 2100. In effect, this can be thought of as a longer-term stabilisation at 400ppm or below, with a short-term overshoot to 450ppm. This is well illustrated by Paul Baer of EcoEquity and Michael Mastrandrea of Stanford in their work for the UK's Institute of Public Policy Research, published as *High Stakes*.[13]

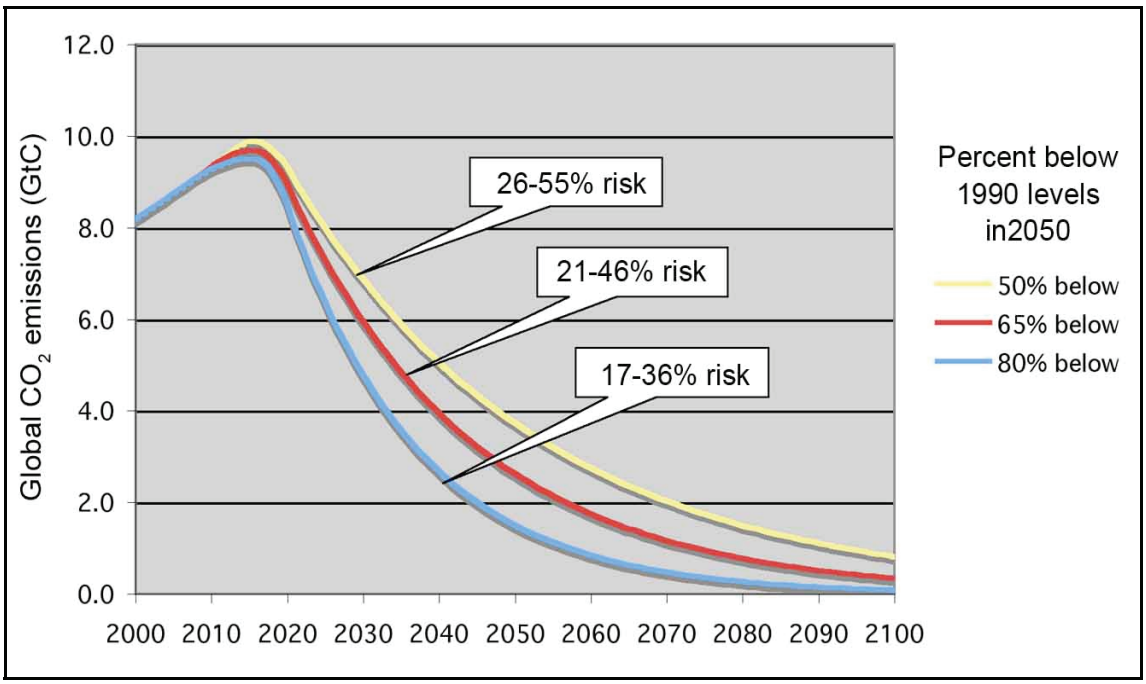

Figure 1: Three alternative estimated trajectories for global emissions, each with a peak in 2015 and then with a decline by 50, 65 and 80 per cent respectively by 2050. Each continues its decline beyond 2050, with even the least stringent finishing with a global emissions cut of 80 per cent. Against each is the estimated risk of exceeding 2°C. Calculated by Paul Baer.[14]

Using the same simple global model, new calculations for Christian Aid by Baer reveal that even if global emissions peak by 2015 and are halved by 2050 – a feat that already requires cuts in developing as well as developed world emissions – there is a risk of up to 50-50 of forcing global average temperatures above +2°C (see figure 1). Were global emissions to be cut by 65 or even 80 per cent by 2050, the risk might be lowered but it would not be eliminated. It is also important to note that the risks associated with each trajectory are based on sustained reductions after 2050 as well as before.

This work suggests that minimising the risk of exceeding 2°C requires an 'emergency programme' of mitigation where consistent reductions are made in order to reduce emissions to less than the absorptive capacity of the earth (while probably increasing its absorptive capacity at the same time). Any such model is necessarily highly speculative; it is impossible fully to take account of how much deforestation can be avoided or how other ecological systems and the oceans will respond to temperature increases up to two degrees. But what such work makes clear is that policy decisions taken *now* will determine the degree of climate change with which humanity has to cope.

Rather than becoming bogged down in the relative efficacy of different models, it is important – for the safety of current, highly vulnerable communities and future generations – to accept the reality of the current situation. Because of procrastination by politicians, industry and individuals we now face a situation where, in general terms, we must begin the job of reducing emissions globally now. The peak must be no later than 2015 and the decline thereafter must be rapid and sustained, with all regions of the world contributing. The aim should be virtual decarbonisation of human activity by 2100, with a halving of emissions well before 2050, perhaps as soon as 2030.

This assumption lies at the heart of the Greenhouse Development Rights (GDRs) framework, on which this briefing is based. In GDRs, the modelling of responsibility and capability is built on a lowest risk 'emergency programme' of emissions reductions, illustrated by the blue emissions curve in figure 1. What such a stringent global programme of cuts quickly exposes is the need for emissions reductions not only in industrialised countries, but also in poorer nations of lower development. So in order to have an emergency programme, one needs a framework for equity such as GDRs.

2. THE INCONVENIENCE OF GLOBAL POVERTY

The resonance of 2015 as a target year for global emissions to peak will not be lost on anyone involved in the fight against poverty. The year 2015 is when global targets to halve extreme poverty, improve maternal and child health and achieve universal primary education – the millennium development goals (MDGs) – are due to be hit. Christian Aid reiterates its call for an additional MDG to be agreed on climate change.[15]

Such a goal ought to have at its heart three principles:

- Firm commitments from developed countries to decarbonise their economies within a generation (ie by 2050).
- Whatever assistance is necessary to help poorer countries to cope with the inevitable and increasing impact of climate change.
- A global new deal to promote a low carbon model of development; one that does not further add to the atmospheric stock of greenhouse gases.

The first of these – massive, rapid and sustained cuts in rich country emissions – is a very long way from being a done deal and even where the rhetoric is improving, the policies to bring about such cuts are still largely absent. But it is the last of these three principles that is both the most challenging and the most critical.

Hitherto, industrial development and the use of fossil fuels have been intrinsically linked. It is fair to say that while some improvements in the efficiency of the industrialisation process have been made, no country has yet managed to develop its economy without joining the league of high emitters, as is apparent from the examples of India and China. But this has to change if any emergency programme of emissions reductions is to take place.

Figure 2 illustrates this with stark simplicity. The blue line is the global emergency programme, which it is worth remembering still carries a risk of between 17 and 36 per cent of exceeding 2°C. This requires a cut in *global* emissions of 80 per cent by 2050 over 1990 levels.

The red line illustrates a cut in industrialised country (Annex 1)[16] emissions of almost 90 per cent by 2050, which is at or beyond the absolute amount of stringency possible. Terrifyingly, the red curve also shows no increase on current levels of emissions in industrialised countries It is worth noting that even the UK increased its CO_2 emissions by 1.25 per cent in 2006.[17]

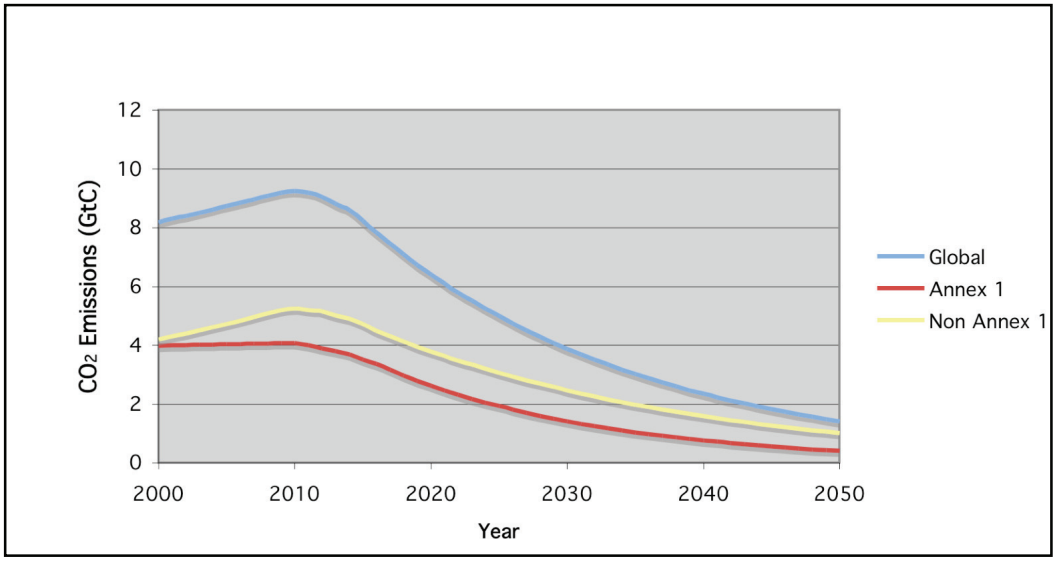

Figure 2: One possible division of the remaining carbon budget under the 'emergency pathway,' with Annex 1 emissions declining to 90% of 1990 levels by 2050. From Baer/Athanasiou/Kartha, *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, 2007

The yellow line is the sum of the blue line minus the red line; global emissions reductions minus the maximum possible contribution towards the cuts from rich countries. This represents the emissions trajectory that non-Annex 1 countries – the developing and poorest nations – must follow. It allows for some short-term expansion of emissions but, critically, by around 2013, even these countries must begin stringent reductions. Significantly, according to this pathway, average per capita non-Annex 1 emissions never rise above one tonne.

The need for emissions in developing countries to peak soon and then decline is manifest but rarely spoken. Climate negotiators from these countries understandably wish to restrict any discussion of mitigation to rich countries; a focus that Christian Aid supports while binding targets and, moreover, concomitant actions are not forthcoming.

But this position is not sustainable, since more than half of absolute emissions and 73 per cent of their growth is now accounted for by the developing world.[18] It is clear that even if industrialised countries nullified their contribution to the stock of gases, developing countries would precipitate James Hansen's 'different world'.

However, there is one, significant hitch. Namely, that the countries outside Annex 1 – those that also have to cut emissions and must do so in the near future – are where the majority of the world's 2.6 billion poorest people live. These nations therefore face a conundrum. They are likely to be profoundly affected as global temperatures increase, but they are less able to afford their part in its prevention while simultaneously tackling poverty and going about the task of development.

In the view of Christian Aid and EcoEquity, it is their right to do this. And while lengthy and important debate is needed about what constitutes development and to what extent industrialisation as we know it should be part of the process, with every passing day the carbon budget available to poorer nations to expedite this process is shrinking.

3. CLIMATE JUSTICE

The procrastination by rich countries over cutting emissions, in spite of the very clear agreement to do so 15 years ago at the 1992 Rio summit, has left very little room for manoeuvre. Whether or not atmospheric space should ever have been made available for polluting during the act of development is a moot point that is not worth debating. The need now is for the atmosphere to be given time to recover, not only by reducing emissions for a given period of time, but also by sustained reductions towards an end point of low-carbon living.[19]

This is bad news for rich countries whose economies are still largely based on being able to pollute for free, but worse news for countries whose development hopes were built on an expectation that they, too, would enjoy an unlimited right to pollute. If we take climate change seriously then this opportunity has been lost. But since the means to achieve high-carbon development are still available and – significantly – still cheaper than the alternatives,[20] then it is hardly surprising that those developing countries currently enjoying rapid economic growth are also increasing their emissions with similar rapidity.

More efficient use of resources, better wealth distribution and new technology will all play a part in reducing the carbon intensity of development, but the new development model is one conundrum too far for this briefing. The immediate concern is how in Bali, Indonesia, in December 2007, countries at different levels of development will line up to negotiate an agreement that stands a decent chance of avoiding climate catastrophe.

Christian Aid and its partner EcoEquity believe strongly that such a deal is only possible and will only prove effective if the question of development is explicitly taken into account in climate change negotiations. This is not a new thought, but one that is already at the heart of the existing United Nations Framework Convention on Climate Change, which states that:

> *'… the global nature of climate change calls for the widest possible co-operation by all countries and their participation in an effective and appropriate international response in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions.'*[21]

This concept has been stated many times during the evolution of the climate change debate and was recently reiterated in the G8's communiqué following the meeting in Heiligendamm, Germany.

The Greenhouse Development Rights approach is based on this credo. It seeks developmental equity in the sharing out of the burden of restricting emissions and increasing our chances of staying below 2°C.

At its heart is a responsibility and capability index (RCI) of all countries, which is calculated using well-known and accepted cumulative emissions data as a proxy for responsibility, and national wealth and wealth disparity data as a proxy for capability.[22] For those wishing to measure and benchmark international negotiations on climate in order to judge their level of fairness, as well as their likelihood of succeeding in bringing an end to the political impasse, this RCI approach provides an overdue and useful tool.

Importantly, the RCI shows clearly and in a way that is beyond any reasonable dispute which countries should bear the majority of the costs of mitigating emissions and also of backing global initiatives to support adaptation costs. The essence of the UNFCCC is that all humans must be involved in the fight against both the causes of climate change and against the increasing inclemency of the weather. The GDRs framework takes this head on by suggesting that we therefore need a fair and transparent means of sharing out the burden, based on responsibility for the problem and capability to deal with its fallout.

In this way, no one escapes playing their part in tackling climate change; all countries are brought inside a global new deal. But those with more responsibility for the problem and – perhaps as a result – greater capability, both to mitigate and to adapt, are asked to pay. Those at the top of the index may indeed be asked to pay three times over as they take steps to cut domestic emissions, contribute towards global emissions reductions and towards meeting the global adaptation requirement.

The GDRs approach is about fairness in sharing the burden of mitigation and adaptation and explicitly not about sharing out rights to pollute. Well-known 'per capita' approaches to apportioning emissions are instructive in terms of exposing the injustice of climate change – that those who are most vulnerable to its impact are least responsible for its cause. But it is too late for everyone on earth to claim rights to emit CO_2 and far better in Christian Aid's view to focus on development rights, which should now, wherever possible, be claimed without polluting.[23]

GDRs would also provide an incentive for clean development, bridging the gap between the cost of building fossil fuel-based and non-fossil fuel-based energy systems; those that still need urgently to be constructed if both human and economic development is to be achieved. Funds from countries with a high rating on the RCI – with the bulk of both responsibility and capability – would be asked to compensate countries with a low rating for now having to meet these additional costs. In effect, those that have grown wealthy by enjoying free pollution would be asked to repay their debt to those that now cannot.

4. SHARING OUT THE BURDEN, REPAYING THE DEBT

In arriving at the metrics for its responsibility and capability indicators, the GDRs framework makes a series of transparent, political choices, each of which is spelled out in the full paper.[24]

These include:

1. **The available carbon budget**, which is defined according to an emergency trajectory which gives us the highest possible probability of keeping global warming below 2°C, as discussed in section 1 of this briefing.
2. **The measure of responsibility**, which is defined using cumulative emissions from 1990, the year during which the UNFCCC was first drafted and against which official emissions levels are gauged, to 2005, the last for which comprehensive emissions data is available.[25]
3. The comparative wealth of nations is used as **the measure of capability**, expressed in US$ income per capita, adjusted for purchasing power parity and for the Gini coefficient (an index of nations according to the national wealth disparity).[26]
4. **A 'development threshold'** of US$9,000 per capita is used. The more of its population a country has living below this threshold, the less of the global burden of paying for mitigation and adaptation it is required to take on.

It is possible to combine these measures of responsibility and capability[27] and then to index countries according to their relative share of the burden. How this is approached in the GDRs framework is explored in great detail in the full paper.

It is important to note that specific choices have been made in order to arrive at fair, transparent and defensible measures of responsibility and capability in order to compare nations. Different choices (ie, were the development threshold lower or were cumulative emissions backdated 100 years or to the beginning of the industrial revolution) would produce different end results, but would not change the overall tenor of the message inherent within GDRs.

The framework quite deliberately echoes the concept central to the UNFCCC; that countries at a higher stage of development are, without exception, more responsible for and more capable of tackling climate change and dealing with its impact. This is recognised explicitly in the UNFCCC text and, in the case of adaptation, Article 4.4 of the framework convention states that:

> *'The developed country Parties (signatories) and other developed Parties included in Annex II 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.'*

Accepting that no one calculation of responsibility and capability can be definitive, but that each will share similar characteristics that produce largely consistent results, those employed in the GDRs framework yield the following, perhaps unsurprising, results (see table 1)

Collectively, high-income countries with only 15.6 per cent of the world's population have 53.9 per cent of global income which, when adjusted for purchasing power parity and inequality, translates to 78.8 per cent of global capability. This group of countries' share of cumulative emissions is 52.7 per cent, which, when combined, means they must shoulder around three-quarters (78.5 per cent) of the burden of global mitigation and adaptation.

Of this group, the US has by far the highest RCI and therefore the greatest share of the burden at almost one-third of the global total (34.3 per cent). This shows how the RCI goes beyond simple shares of current emissions, which in the case of the US is now less than one-quarter. Similarly, while the UK emits 2.13 per cent of the global total of greenhouse gases domestically, because of its historical contribution and its existing wealth, both of which are high relative to its population, its share of the global burden is 4.3 per cent.

	Percentage share of…					
	Global population	Global income	Global capacity	Cumulative emissions 1990-2005	Global responsibility	Global RCI
United States	4.7	20.2	31.8	23.7	37.0	34.3
EU (27)	7.7	21.5	29.0	17.8	23.1	26.6
United Kingdom	0.9	3.3	4.7	2.5	3.6	4.3
Germany	1.3	4.0	5.6	3.8	5.2	5.5
Russia	2.2	2.5	1.5	7.4	4.3	2.3
Brazil	2.9	2.6	2.1	1.3	1.0	1.6
China	20.4	14.7	7.1	13.8	6.6	7.0
India	17.0	6.1	0.4	3.8	0.3	0.3
South Africa	0.7	0.9	0.8	1.6	1.5	1.1
LDCs	8.3	1.4	0.1	0.4	0.0	0.0
All high income	15.6	53.9	78.8	52.7	76.9	78.5
All middle Income	47.7	36.6	20.7	41.1	22.8	21.1
All low Income	36.7	9.5	0.5	6.2	0.4	0.5

Table 1: Global percentage shares of population, income, capacity, cumulative emissions, responsibility, and RCI for selected countries and groups of countries.[28]

It may seem unnecessarily punitive to suggest that a country such as the UK, where strong promises have been made to tackle climate change, be responsible for a percentage of the burden of tackling climate change twice that of its current share of global emissions. However, its placing on the RCI appears relatively lenient when contrasted with recent estimates of the contribution to global emissions as a result of the international activities of companies raising their money in the City of London.[29]

The poorest nations, including Least Developed Countries and many small island states that are highly vulnerable to the impact of climate change, have none of the burden. Those in between, including Brazil and China, collectively must shoulder more than one-fifth (21.1 per cent) of the global burden, with China picking up seven per cent.

While these shares have been arrived at using consistent and transparent calculations, with the same rules applying to all countries, it is also politically convenient and important to note that the poorest countries are required to do almost nothing except tackle poverty, and China and India, while having obligations, would be able to discharge all of these domestically, and would also receive considerable assistance from high income countries.

The obvious and logical next question to address is precisely what is being divided up. In the GDRs framework it is explicitly not emissions rights (or rights to pollute), but rather the global burden or cost of cutting emissions and – importantly – of adaptation. But how much will these two activities cost?

At Stern's one per cent of GWP (2005), the global mitigation and adaptation cost would be US$617 billion. Table 2 shows how this sum would be divided according to the RCI.

While the principle of climate prudence spelled out by Stern holds true, the costs of an emergency programme of climate protection, which aims for a 450ppm peak followed by a decline to 400ppm, is clearly going to be higher. Such a programme could double or treble the size of the burden. Interestingly for a country such as the UK, this would make our annual sum – the cost of avoiding climate catastrophe – around £37.5 billion, roughly equivalent to the UK's military budget. This suggests that tackling climate change, although costly, is as much about political choices.

	Total income	Total capacity	Share of global RCI	If total mitigation and adaptation costs are 1 percent of GWP	
	(Billion $ PPP adjusted, 2005)	(Billion $ PPP adjusted, 2005)	(percent)	Total bill (Billion $ PPP adjusted)	Average "taxpayer" bill ($ PPP/person)
United States	12,497	9,868	34.3	212	780
EU (27)	13,292	8,997	26.6	164	372
United Kingdom	2,004	1,466	4.3	26	458
Germany	2,472	1,735	5.5	34	428
Russia	1,552	464	2.3	14	194
Brazil	1,601	651	1.6	10	193
China	9,078	12	7.0	43	142
India	3,779	128	0.3	2.1	51
South Africa	525	253	1.1	6.5	382
LDCs	832	15	0.0	0.2	7
All High Income	33,301	24,443	78.5	485	519
All Mid. Income	22,589	6,422	21.1	130	170
All Low Income	5,859	168	0.5	2.8	55
World	61,750	31,029	100.0	617	353

Table 2: Total national income and national capacity (calculated with US$9,000 development threshold), along with national and individual 'bills' (calculated on the basis of the number of people above the US$9,000 development threshold) assuming a total global obligation (combining mitigation and adaptation) of 1% of GWP. Note that the UK and Germany are included in the EU27 figures, in addition to being shown separately. (All figures 2005 US dollars, PPP-adjusted).[30]

The GDRs framework is, first and foremost, a proposal for sharing out the burden, whatever that burden turns out to be, and neither the size nor the precision of the figures here should be taken literally. But early action (if action 15 years after a comprehensive international treaty can be called early) will clearly reduce the size of the burden in economic terms. It is also likely to reduce the human burden of further, preventable, droughts, floods, hurricanes and the resulting conflict, death and displacement in many regions already affected by these blights. It is for this reason that Christian Aid strongly supports a rapid and dramatic reduction in global emissions and a parallel and similarly dramatic initiative to support those most vulnerable to climate change to deal with its impact.

CONCLUSIONS

'We should adhere to the principle of common but differentiated responsibilities established in the United Nations Framework Convention on Climate Change. This principle, which recognises differences among countries in the level of economic development, historical responsibility and current per capita emissions, forms the basis for maintaining and promoting future international cooperation.'

Hu Jintao, president of China, G8 Summit statement, Germany 2007

While countries negotiating a new deal on climate change ignore the development rights of poorer nations, it is difficult to envisage those poorer nations signing up. And yet without them an adequate deal for the climate is not possible. This is the 'Catch 22' in the global climate debate that Greenhouse Development Rights attempts to unpick.

The GDRs framework begins with the principle of '*common but differentiated responsibilities and respective capabilities*' that the UN's Framework Convention on Climate Change has at its heart. All the world's major emitters, including the US, Canada, Australia, China, India and Brazil are signatories and have therefore already committed themselves to this principle.

It would be naïve of Christian Aid to recommend that the legions of climate negotiators (significantly, many more from developed than from developing countries) at the UNFCCC simply adopt GDRs. But together with EcoEquity, we sincerely hope that the framework – especially its index of responsibility and capability – will illuminate those discussions. It is also our profound wish that the systematic thinking through of the challenge of a global new deal on climate change will prove salutary, as ministers head for the UN's Bali meeting in December 2007.

While the calculations and calibrations at the heart of the GDRs framework may be complex, the logic is simple:

- It begins with the science of climate change and the stark warnings of the dangers of allowing global warming to exceed 2°C and deliberately chooses an extremely stringent global emissions budget as a result.
- It assumes that sticking within this budget may not be cheap, but that the bill, whatever it turns out to be, must be paid. And that it is unfair to ask the poorest to shoulder the burden of solving a problem they have manifestly not created, at least while they are still poor.
- It also assumes that sticking within this budget is not enough and that many will still suffer severe impacts and so takes into account the burden of adapting to the climate change we cannot avoid.
- It proposes that a fair and transparent means of sharing the burden of mitigating emissions and adapting to climate change is an index based on responsibility for and capability to deal with climate change.
- Finally, it goes ahead and builds a global responsibility and capability index based on a reasonable although not definitive set of assumptions about each, in which wealthy people in poor countries are not excluded from obligations.

The GDRs framework stops short of suggesting a mechanism by which 'climate levies' might be applied and the resulting finance spent. The current favourite among countries advocating action on climate change is carbon trading and GDRs could be used to as a means to allocate permits in a cap-and-trade system

Less popular with governments and yet perhaps easier to conceptualise is a taxation-based method whereby the cost burden of dealing with both mitigation and adaptation is levied through existing tax systems or through the use of 'green' taxes on companies and consumption by individuals. But for a tax-based mechanism to service a global obligation (achieving reductions in emissions and adequate adaptation beyond national borders), some manner of global taxation mechanism or agreement would be necessary. This is perhaps some way off.

Much closer is the start of negotiations for what, in effect, is a global new deal on climate change. And terrifyingly close is the year 2015, when global emissions must peak and poverty goals be reached.

The twin aims of tackling poverty and climate change – for one cannot be achieved without the other – must be brought closer together. It is the sole recommendation of this briefing that this process begins in Bali and that the politicians on whose shoulders it falls take seriously the twin challenge. Climate protection cannot be negotiated and development cannot be sacrificed. Something truly remarkable, perhaps without precedent, is required and against this backdrop a framework proposal such as Greenhouse Development Rights appears not only feasible but also necessary.

ENDNOTES

1 Al Gore, 'Moving Beyond Kyoto', *The New York Times*, 1 July, 2007.
2 Developing countries – those outside the UNFCCC's Annex 1 (see endnote 15 below) – have no binding commitments and in many cases their emissions were very much lower in 1990, the year against which most reductions are calibrated. While developed (Annex 1) country emissions have also grown significantly, they are legally bound to reduce over their emissions levels at 1990.
3 As we discuss below, the cost of mitigating climate change is quite uncertain, but has been widely estimated as on the order of 1% of GWP to reach stabilization at 550 ppm CO2-equivalent. Equally importantly, however, are the costs of adapting to climate change that will not be avoided, and compensating those who are harmed. In his review of the economic of climate change, Sir Nicholas Stern estimates that the cost of an unmitigated tonne of CO2, including the social and economic costs of the damage it causes, is US$85. In 2002 the Government Economic Service (GES) published advice with a central Social Cost of Carbon value of £70 per tonne of carbon emitted, within a range of £35 to £140. Per tonne of carbon dioxide, the corresponding values are, in round terms, £20 per tonne of CO2.
4 Responsibility is calculated using cumulative emissions since the first framework treaty on climate change was drawn up in 1990. Capability is calculated using both purchasing power parity, adjusted per capita income figures and the Gini coefficient to build in a response to wealth disparity within as well as between countries. See *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, November 2007, available at http://www.ecoequity.org.
5 The UK's economy is the fifth largest in terms of market exchange rates and sixth largest when adjusted for purchasing power parity.
6 *Coming Clean*, Christian Aid, January 2007.
7 See http://budget2007.treasury.gov.uk/page_09.htm
8 See *Two Degrees, One Chance*, Tearfund, Oxfam, Practical Action and Christian Aid, May 2007.
9 UN 2007, *Fourth Assessment Report of UNIPCC*. See in particular the assessment of working group II which looks at the evidence surrounding already observed and likely impacts.
10 See interview with James Hansen by Kerry O'Brien of ABC Television. www.abc.net.au/7.30/content/2007/s1870955.htm
11 See, among others: M Meinshausen, 'What does a 2C target mean for greenhouse gas concentrations?', *Avoiding Dangerous Climate Change*, Chapter 28, Cambridge University Press, 2006. Hare and Meinshausen, 'How Much Warming Are We Committed To And How Much Can Be Avoided?', Potsdam Institute for Climate Impact Research, *PIK report 93*, Figure 7, p 24, 2004. Baer and Mastrandrea, *High Stakes: Designing Emissions Pathways to Reduce the Risk of Dangerous Climate Change*, Institute for Public Policy Research, November 2006.
12 Although this statement is muddied by not specifying the baseline year over which cuts should be made, which ought in UNFCCC terms to be 1990.
13 Baer and Mastrandrea, *High Stakes.*
14 *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, November 2007.
15 *The Climate of Poverty*, Christian Aid, May 2006.
16 Signatories to the United Nations Framework Convention on Climate Change are split into Annex 1 and II and Developing countries. Annex 1 countries are required to take on commitments to reduce and Annex 11 countries, a subset of Annex 1, are also required to pay costs incurred by developing countries. The developing country or 'non-Annex 1' countries have no obligations.
17 See http://news.bbc.co.uk/1/hi/sci/tech/6506223.stm
18 *Proceedings of the US National Academy of Sciences*, 2007.
19 It is equally important that the ecosystems that absorb atmospheric carbon and also sustain life are protected and strengthened. It might well be that an equitable climate regime could finance not only reductions in emissions and adaptation, but also avoid deforestation, reforestation and other ecosystem protection and revival. Since many poor people live among such ecosystems and fare best when they are in good health, it is also pro-poor to advocate such measures.

20 There is, of course, another lengthy debate to be had at this point about why development through fossil fuel use is cheaper, which involves many factors. One important reason for the relative cheapness of fossil fuels is that the pollution they cause is not a priced item and therefore – since it incurs a cost, which may be quite staggeringly large – can be considered a subsidy. With the removal of this subsidy through the proper pricing of emissions, the cost of energy generation based on fossil fuels will rise relative to non-emitting alternatives.
21 *Framework Convention on Climate Change*, United Nations, 1992.
22 The 'capability' side of the index is adjusted not just for purchasing power parity, in order to reflect the cost of living as well as income in different countries, but also for wealth distribution. Countries that are more unequal are thus penalised in essence, both because it is fair and because it may prove politically necessary for relatively wealthy elites in emerging economies to share the burden of reducing emissions.
23 The leading model advocating equal per capita emissions rights globally is 'Contraction and Convergence', to which all equity frameworks and proposals owe their existence. The architects of GDRs were themselves for many years supporters of Contraction and Convergence.
24 *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, November 2007.
25 For reasons of data availability and to defer certain controversial questions, currently only CO2 emissions from fossil fuel combustion (and cement manufacturing) are included.
26 This is a relatively crude means of calculating capability to deal with mitigation of and adaptation to climate change, and could easily be expanded to include human development indicators and other social and cultural metrics which might influence a country's capability to respond. But EcoEquity and Christian Aid do not feel this would make a great deal of difference to a country's overall place in the index, as the differences between nations at different stages of development are quite plain.
27 Plainly, the RCI must have the property that, among countries with the same capabilities but different responsibilities, the country with greater responsibility has the greater obligation. Just as plainly, among countries with the same responsibility but different capabilities, the one with the greater capability must have the greater obligation.
There are many formulas which have this property. The GDRs framework uses one that multiplies responsibility and capacity in a way that enables different weights to be given to each:
$RCI = R^a \cdot C^b$. In this formula, a=0.4 and b=0.6, ie, capability is given a weighting that is 50 per cent greater than responsibility. A sensitivity analysis is included in the full paper.
28 *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, November 2007.
29 Christian Aid found that the FTSE 100 companies could be responsible for up to 15.7 per cent of global emissions. See *Coming Clean*, Christian Aid, 2007.
30 *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*, EcoEquity, November 2007.