Equity in Climate Change: The Great Divide

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1. EXECUTIVE SUMMARY[1]

There is a strongly held view in the policy analysis community and beyond that developing countries will play a significant role in determining the success of the multilateral climate change regime under the UN Framework Convention on Climate Change (FCCC). It is equally widely understood that, consequently, success will not be forthcoming unless the key concerns of these countries – particularly those pertaining to inequities – are sufficiently taken into account in the future development of the regime.

In 'Diagnosing the Divide,' this study detects a clear North-South Divide in the views on the nature of the paramount climate change equity problem. In the Northern hemisphere, where the relevant discussion is spearheaded by non-government stakeholders (academic, NGO), it is regarded to be the issue of allocating emission mitigation targets; in the South, the concern – reflected by many governments – is above all about the discrepancy between the responsibility for, and the sharing of climate impact burdens.

Acknowledging the importance for the global climate change regime to continue its efforts in avoiding and limiting future anthropogenic climate-related disasters, the second part of this study ('Bridging the Divide: Redressing The Balance') argues that we have passed the point where complete avoidance could have been assured, and that consequently the regime must face up to this inevitability and begin to prepare appropriate impact/disaster *response* measures. Given the existing threat, particular urgency is attached to a proposal for reform of the relevant disaster *relief* funding mechanism by creating an FCCC *Climate Impact Relief* (CIR) *Fund* to achieve an international relief system adequate to the challenge. Because this is to involve merely a more efficient funding mode, such a reform could be carried out with little or no additional costs (no 'new money'), yet with significant benefits to the international community.

Key Points with regard to 'Diagnosing the Divide'

The Problem. The existence of such a Divide has been confirmed in the wake of the seventh session of the Conference of the Parties (COP7) in Marrakech: a review of COP7 media reports and ministerial statements provides significant positive evidence that (i) the most pressing inequity issue for developing country stakeholders is having to bear human impact burdens disproportionate with causal responsibilities, and (ii) their view that this issue has hitherto largely been ignored. A look at recent academic climate equity literature lends support to this view. Indeed it indicates that while 'equity' is often put on the agenda by developing country experts, the scope of the agenda itself – namely emission mitigation – has been firmly set by the industrialised world.

The Causes. One of the root causes of this Divide is a fundamental difference in the perception of climate change itself. In the industrialised North there is a widely held 'ecological view' of the problem. Climate change is perceived as a problem of polluting the environment, of degrading the eco-system. As such, its essence is seen to be that of a wrongful act against 'Nature.' Accordingly, environmental effectiveness – the capacity to 'make good' the human-inflicted harm on Nature – becomes a key

[1] Revised extracts of this summary have appeared as 'An FCCC Impact Response Instrument as part of a Balanced Global Climate Change Regime' in e-print format (www.OxfordClimatePolicy.org) and are scheduled to be published as a Viewpoint 'A New Delhi Mandate?' in *Climate Policy* 79 (2002) 1 – 3.

criterion in assessments of climate change measures. The chief victim from this perspective is Nature, mankind's role is primarily that of culprit. And while climate impacts on human welfare are regarded as potentially life-style-threatening, they are taken to be self-inflicted and hence largely 'deserved.' Environmental integrity ('to do justice to Nature'), is the overriding moral purpose. Issues of distributive justice are only of concern insofar as they could become obstacles in the pursuit of this paramount objective.

The reality in the South is quite different: climate change has primarily come to be seen as a human welfare problem – not least because of the assessment work carried out by the Intergovernmental Panel on Climate Change (IPCC). The harm is against humans, it is largely other-inflicted, and it is not life-*style*-, but *life*-threatening. In short, the chief victim of climate change is not 'Nature', but people, and the paramount inequity is one between human victims and human culprits. Climate change is a development problem, no doubt! But for the developing world it is *not* a problem of sustainable development – in the technical sense of 'learning to live within one's ecological means' – it is a problem of *un*sustainable development, in the non-technical sense of failing to survive.

Key Points with regard to 'Bridging the Divide'

The Lessons. At the *decision-making* level, human impacts and their differentiated causal responsibilities must be fully acknowledged and taken into account in the multilateral negotiations under the Framework Convention. Notwithstanding the necessity to negotiate architectural extensions (e.g. second commitment period targets) of the mitigation regime established under the Kyoto Protocol, the issue of sharing climate impact burdens must be given room centre stage, particularly since many impact burdens have become inevitable.

To enable such a redress in the balance of negotiations, the lesson at the level of *policy analysis* must be to put much greater effort into thinking of innovative ways in which these human impact burdens could be distributed. The fact is that – apart from the controversial monetisations of economic cost-benefit analysis (themselves fraught with intrinsic equity problems) – we seem to have little if any idea how such burdens, such as that of 25 million expected Bangladeshi refugees, could actually be 'shared', let alone be shared in an equitable manner.

The Status Quo. In designating the 1990s as *International Decade for Natural Disaster Reduction* (IDNDR), the UN General Assembly gave its support to an emerging consensus in disaster management circles on the importance not to neglect disaster *reduction*, that is 'measures designed to avoid (prevention) or limit ([impact] mitigation and preparedness) the adverse impact of natural hazards.'[2] And by creating an *International Strategy for Disaster Reduction* to build on the IDNDR experience, the General Assembly reaffirmed this support in January 2002.

The reduction – avoidance and limitation – of unacceptable climate impacts on individuals and societies can be achieved both by *reducing the hazards* associated with climatic change ('climate hazards') and by *lowering the vulnerability* of the individuals and societies in question. The former is unusual in the natural disaster management context, where the occurrence of hazards (volcanic eruptions, hurricanes, tsunamis etc.) itself is largely beyond human control. The potential for climate

[2] ISDR working definition of 'Disaster Reduction' 2001.

hazards, however, can be reduced by mitigating their anthropogenic causes, that is by mitigating net-greenhouse gas emissions into the atmosphere.

In the ten years since the adoption of the FCCC in 1992, the issue of reducing potential climate hazards through emission mitigation has figured prominently in the multilateral negotiations, culminating in the Kyoto Protocol with its recent operationalisation in the Marrakech Accords. And given the acknowledged differentiated responsibilities for the problem, it was right for the global regime to begin its impact-reduction efforts by focussing on emission mitigation.

This is not to say other climate impact management activities – subsumed under the heading of 'adaptation' in climate change parlance – had not been addressed. For example, the FCCC negotiations to date have seen the creation of several funds dedicated to encouraging adaptation measures, particularly in developing countries, who are likely to bear the brunt of the predicted impact burdens in stark disproportion to their causal responsibility. True to the UN maxim for the last decade, these funds and most of the other adaptation measures adopted under the aegis of the Climate Convention – such as an envisaged transfer of technologies – were designed to encourage and bring about medium- to long-term changes in order to reduce future impacts by reducing the vulnerability of the people and societies involved. Taking into account that disaster *preparedness* – such as early warning systems, and contingency planning (as decided on in the Marrakech Accords) – officially falls under the category of disaster reduction, we find that practically all the decisions taken and measures adopted under the Framework Convention and the Kyoto Protocol pertain to climate impact *reduction*, in line with the FCCC Art. 3.3 stipulation that 'the Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects'

This may, at least in part, be due to the climate change community recognising the consensus within disaster management circles that disaster reduction has to be made a priority. Another reason, however, might be the complementary perception that climate impacts themselves are a medium- to long-term matter. The former is unquestionably correct, the latter, however, portrays a degree of 'temporal presbyopia' (the inability to focus on things that will happen in the near term) which in the climate change context could border on negligence.

Near-term Threats. As argued in Chapter 6, the problem is that we have passed the point when the spectre of unacceptable climate impacts could still have been avoided through implementing such impact (disaster) *reduction* measures. For the next decades, we are locked-in to an unavoidable rise in global mean temperature by virtue of our past emissions, due to factors such as the large thermal inertia of the earth's oceans (Chapter 6). This is unlikely to pass without creating serious climate hazards. As reported in the *Times of India* ('Himalayas lakes filling rapidly,' 16 April 2002), Klaus Töpfer, Director General of the United Nations Environment Programme (UNEP), for example, has been 'giving early warning' on behalf of UNEP that 44 glacial lakes in Bhutan and Nepal are filling so rapidly because of rising temperatures that 'any one of these could, unless urgent action is taken, burst its banks in five to ten years time with potentially catastrophic results for people and property hundreds of kilometres downstream.'

A statistical (time-series) analysis[3] shows that over the past three decades, the

[3] Chapter 6.

proportion of the global population affected by weather-related disasters has doubled in linear trend rising from roughly 2% in 1975 to 4% in 2001. In absolute numbers, these trend figures have almost quadrupled over this period, rising from 70 to 250 million people. Under 'Business-as-Usual' (BaU) conditions, this trend is highly likely to continue over the next three decades. A conservative (BaU) estimate based on this analysis suggests that the 2030 proportion of people affected globally will with 95%-confidence be between 3% and 11%. In absolute figures we can thus be very confident that – under BaU conditions – the number of people affected by weather-related disasters in 2030 would be somewhere between 220 and 860 million in the worst case, i.e. twice the worst recorded figure (417m in 1987) in the past three decades.

The fact that climate change is a near-term problem has been admirably summarised by the Chairman of the House of Commons' International Development Committee on the occasion of the publication of their report *Global Climate Change and Sustainable Development*[4] when he stated that

> "Everything that we have seen during this inquiry has reinforced for us the fact that climate change is here, is happening now, can only get more pronounced and must be addressed urgently. It's not only about reducing the levels of greenhouse gases but about adapting to changes that are happening now and will go on happening. It's adaptation that the developing countries care about and it's that need that DFID [UK Department for International Development] and other donors should be getting behind and supporting. Without action to address climate change now hundreds of millions of people will be additionally at risk of hunger, water shortage, flooding or malaria."

The cardinal climate change inequity is consequently not the *potentially* unfair allocation of mitigation targets but the *inevitably* unfair distribution of climate impact burdens.

Disaster Response Measures. Notwithstanding its fundamental importance, disaster *reduction* (i.e. disaster-prevention, -mitigation, and -preparedness), by itself, does not exhaust the 'continuum' of disaster management. It is complemented in an important way by the 'triptych' of disaster *response* activities, divided into disaster-relief, -rehabilitation, and -recovery. As long as there is a residual risk of disasters happening in spite of past and future *reduction* efforts, a balanced climate impacts regime must also ensure the provision of adequate impact *response* measures. As early as 1991, Vanuatu – on behalf of the Alliance of Small Island States (AOSIS) – put forward a proposal for an 'International Insurance Pool to provide financial insurance against the consequences of sea level rise, a pool which was meant to be replenished by mandatory country contributions and 'used to compensate the most vulnerable small island and low-lying coastal developing countries for loss and damage resulting from sea level rise.'[5] Until recently, however, the only significant trace of this proposal in the decisions of the COP was the inclusion of the word 'insurance' in Article 4.8 of the FCCC, and Article 3.14 of the Kyoto Protocol. The fortunes of this climate impact recovery mechanism finally changed in July 2001 when – as part of the Bonn Agreement – the COP agreed 'to consider, at its eighth session, the implementation of insurance-related actions to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change'.[6] From the point of view of balancing the current climate (impact) regime,

[4] Third Report, Session 2001 – 02, HC 519, Vol. I; www.parliament.uk/commons/selcom/indhome.htm
[5] Document A/AC.237/WG.II/CRP.8 of 17 December 1991, submitted to the Intergovernmental Negotiating Committee for a FCCC, WG.II, Fourth Session.
[6] Annex to Decision 5/CP.6: VI.1.2; FCCC/CP/2001/5, p.40.

this has to be a welcome development. Rehabilitation and reconstruction are important elements of any impact response regime which have to be promoted and fostered – but they are important only to those who survive. And the threat of climate-related disaster, as indicated above, is not only real, but immediate.

The Need for Adequate Climate Disaster Relief. This is why the climate negotiations' neglect of the third component in the disaster response triptych, disaster *relief*, must be addressed urgently, given that the present system is likely to prove inadequate in dealing with climate-related disasters.

Throughout the last three decades, the UN General Assembly has been 'mindful of the need to strengthen further and make more effective the collective efforts of the international community, in particular the United Nations system, in providing humanitarian assistance'.[7] As a consequence, it called upon the Secretary-General in 1971 to appoint a Disaster Relief Co-ordinator at the Under-Secretary-General (USG) level 'to mobilize, direct and co-ordinate the relief activities of the various organizations of the United Nations system'. In 1992, the General Assembly created several structures – such as an Inter-Agency Standing Committee (IASC), and a Department of Humanitarian Affairs (DHA) – to strengthen the UN system. It also introduced a Central Emergency Revolving Fund (financed by voluntary contributions) 'to ensure the provision of adequate resources for the use in the initial phase of emergencies'.[8] DHA – under the new name of 'Office for the Coordination of Humanitarian Affairs' (OCHA) – had its effectiveness further enhanced as part of the Secretary-General's 1998 reform programme. And yet, notwithstanding the considerable successes of this continuous drive for structural improvements, the experience of the last thirty years has made it clear that such institutional reforms will not be able to achieve their aim (as argued in Chapter 7) in the absence of a complementary reform of the piece-meal voluntary funding mechanisms and the concomitant lack of co-ordination between governments and aid agencies.

The Solution, proposed in Chapter 8, is to create a *Climate Impact Relief* (CIR) *Fund* – based on the tried and tested models of the OCHA *Trust Fund for Disaster Relief* and the *Disaster Relief Emergency Fund* of the International Federation of Red Cross/Red Crescent Societies – under the Framework Convention to cover the expenditures for international weather-related disaster relief and preparedness. To resolve some of the key problems in the current system, such a Fund would have to be replenished regularly on an up-front basis, and rely on existing institutional infrastructures. The latter could, for example, be achieved by having the fund administered by the UN Office for the Coordination of Humanitarian Affairs (OCHA) under the guidance of the FCCC COP and the UN Under-Secretary-General for Humanitarian Affairs in collaboration with IASC agencies. Assuming the international community intends to continue providing an international disaster relief system, the envisaged significant improvement that could be achieved by creating the proposed CIR-Fund is a realistic option, both politically and economically, for its key characteristics are:

• No new money. • No new institutions. • Merely more efficient funding.

[7] 14 December 1971 and 14 April 1992.
[8] A/RES/46/182 (14 April 1992).

Part I:
DIAGNOSING THE DIVIDE

This first part of the study looks at the perception of climate change inequity in light of some recent evidence. The focus is on a North-South Divide ('Great Divide') conjecture of a significant divide between stakeholders from industrialised countries (the 'North') and those from the developing world (the 'South') in the perception of what constitutes *the most pressing* climate change equity problem: for the North, the issue of allocating emission mitigation targets; for the South, the discrepancy between responsibility for, and distribution of, climate impact burdens – an issue which the South also sees as having largely been marginalised (if not practically ignored) in the multilateral climate change negotiations.

The look in this context is merely 'diagnostic.' It neither aims at proving nor disproving the Great Divide conjecture – a task which, if possible at all, would be beyond the limits of this study. The aim here is to evaluate the plausibility of the conjectured divide in light of some recent evidence. The evidence considered falls into two categories. A first investigation ('2. Marrakech Impressions') extends a purely anecdotal picture provided by some preliminary interviews carried out by the author at the seventh Session of the Conference of the Parties (COP7) in Marrakech by considering published media reports from, and high-level ministerial statements delivered at COP7. The second leg of this diagnostic exercise ('3. The Divide in Literature') moves away from COP7 to consider the conjecture of a North-South Divide in light of some of the recent academic literature on climate change equity. The emerging results, finally, are presented in a concluding summary chapter ('4. Summary Diagnosis').

2. Marrakech Impressions

Apart from providing the locus for a set of interviews that gave rise to the 'Great Divide' conjecture, the Marrakech Session of the Conference of the Parties (COP7), at the time of writing, also happened to be the most recent high-level climate change event with global participation, making it a suitable context for a 'reality check' concerning the (equity) concerns of the different stake-holders from across the globe. The 'impressions of reality' gathered here rely on two types of source material: (1) samples of Northern and Southern media reports on COP7, and (2) the ministerial statements delivered during the high-level segment at Marrakech.

As it happens, very little can be gauged from this material about Northern equity views: the topic is not really touched upon. Consequently, this initial stage of our diagnosis focuses on Southern perceptions, postponing the diagnosis of Northern perspectives for the moment. In light of the Southern position in the conjectured Great Divide (GD), the material under consideration is examined with regard to two questions:

(1) What importance is given to the developing country (DC) impacts problem? And

(2) Is it portrayed as an equity issue, particularly in relation to causal responsibilities?

Methodology. An answer to the latter is fairly straight-forward. The former, however, refers to a matter of degree, thus requiring an answer in terms of some scale or other. For the present purposes, a rudimentary and fairly subjective three-valued ordinal scale (0 = no or little importance, 1 = moderate importance, 2 = a key point) has to suffice. Even in this very simple evaluation, there are problems which have to be

acknowledged: while it is relatively easy to categorise extremes (no mention = 0, only topic = 2), it is not straight-forward to do the same for intermediate cases, where a measure of subjective judgement becomes inevitable. For the present purposes, the following rule of thumb is used: if developing country impacts are mentioned together with other issues, then the evaluation is to be based on the number of other issues raised, and the prominence (e.g. sequencing, proportion in size, and most importantly, the language used) of the DC-impacts discussion relative to the other issues. It might be possible to set such an evaluation on a more 'objective' footing, but for the present diagnosis, the method proposed here will have to suffice.

Table 1: CC Impacts on DCs. OECD Media Coverage

Australia	*The Age*	●○○
Belgium	*EurActiv.com*	○
France	*Agance France Press*	○
	Le Monde	○
	Libération	○
Germany	*Berliner Zeitung*	○○
	Der Spiegel	○○
	Handelsblatt	○
Ireland	*Irish Times*	○
Japan	*Asahi Shimbun*	○○
	Kyodo News	○○
	The Japan Times	○○○
N. Zealand	*New Zealand Herald*	○
Switzerland	*Neue Zürcher Zeitung*	○○
UK	*BBC News*	●●○○○ ○○○
	EyeForenergy	○
	Financial Times	○
	Reuters	●●○○○ ○○○○○ ○○○
	The Guardian	●○
	The Observer	○
USA	*ABC News*	○
	CNN	○○○
	Env'nt News Service	●●●○○
	Env'ntl News Network	○○
	National Review	○
	New York Times	○○
	Seattle Times	○
	The Earth Times	●●○○
	USA Today	○
	Washington Post	○○

0% 20% 40% 60% 80% 100%

Legend: ○ No mention of DC (impacts)
● Some mention
● Main focus

2.1 Media Coverage

The North

The Great Divide-diagnosis of the Northern media reports about Marrakech was based on 71 pieces published by 30 sources from ten industrialised – indeed OECD – countries (see Table 1). The pieces were arbitrarily chosen, the only constraint having been (relatively easy) availability on the internet at the time. The sources range from traditional newspapers and news agencies, to purely internet-based media. All the main OECD regions – North America, Australasia, and Europe – are represented.

Of the 71 pieces considered, six (or 8 percent) had their main focus on developing country climate change impacts, and five gave the issue some, however little, mention. In the vast majority of pieces (85 percent) the issue did not appear at all. Indeed, for most of these 'no show' pieces, the classification was particularly simple, since they never mentioned developing countries, let alone their vulnerabilities.[9]

The idea that media may cover stories from different angles is hardly a novel one. It is equally obvious that the reasons

[9] Example of the sort of DC references which do occur in 0-rated reports: 'The Kyoto Protocol only requires developed nations to reduce greenhouse gas emissions. Even if those countries achieve their emission-reduction targets, total greenhouse gas emissions, including those of developing nations, will increase. Even though the quantity of emission by the developing nations is likely to overtake that of the developed nations in 10 years, there is as yet no prospect of developing nations required to join the regulation of their emissions.'[*Asahi Shimbun*, 11 November 2001]

for not mentioning some issue can be manifold. The issue may, for example, be deemed uninteresting for the target public, it may seem unimportant, or it may simply not have arisen.

As concerns developing country impacts, the last of these reasons can be safely dismissed, if only because of the Ministerial Declaration – see Box 1; Section 2.2 – at the end of the session which is witness to the fact that the plight of developing countries did arise at COP7. The fact that merely 15 percent of the Northern media reports sampled chose to mention developing country impacts, thus suggests a predominance of opinion among these media that this issue is peripheral and/or of little interest to the news consumers in the industrialised world.

An editorial in the Melbourne-based *The Age* that did break this mould is worth quoting for its pertinence to the topic of this study: 'Tuvalu is the latest tiny island nation, like Nauru and Kiribati before it, to be approached [by the Australian government] about taking in boat people for processing. Only four months ago, however, Australia rebuffed Tuvalu's request for refuge for its own 11,000 people should rising seas render many South Pacific islands uninhabitable within 50 years. They have looked in vain to Australia for leadership in representing the region's interests.'[17 November]

While this brief survey of the Northern media reporting could lead to the impression that climate change impacts on developing countries were generally regarded as a media non-issue at Marrakech, a look at some articles written by Southern media representatives will correct this impression.

The South

By contrast to the Northern media coverage, Southern media reports are less readily available, especially if one's ability is restricted to reports written in certain idioms. It was therefore all the more fortuitous that the International Institute for Journalism (IIJ) of the German Foundation for International Development decided[10] to invite a group of journalists from Africa, Asia and Latin America to cover the conference. The vast majority of the 50 pieces considered in the Great Divide-diagnosis of southern media reporting thus hail from the resulting IIJ *Reports on the World Climate Summit.*[11]

The material used for the diagnosis (Table 2) covers 21 sources from 14 developing countries (8 Africa, 3 Asia, 3 Latin America).[12] Of the 50 pieces taken into consideration, 12 gave the issue of developing country impacts some mention, while 14 failed to mention it, thus leaving roughly half (24) who saw it as the main issue. Indeed, if one disregards those pieces referring to NGO positions, the percentage of 'main concern' rises to over 60 percent.[13]

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[10] In co-operation with the UNFCCC Secretariat and the United Nations Environment Programme-Information Unit for Conventions (UNEP/IUC).

[11] www.dse.de/iij/cop7news.htm

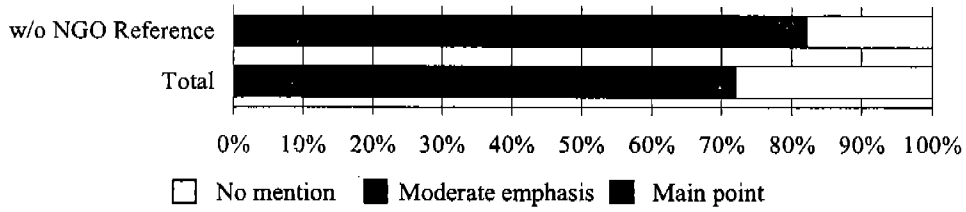
[12] The 16 articles (mostly about African climate change vulnerability) contributed to a special issue of the *Bulletin Africain* – edited and published for the *Réseau Africain Bioressources Energie* by *ENDA* in Dakar/Senegal (http://www.enda.sn/energie) – are not included in this sample because they were written in the wake of and not at Marrakech. They are however referred to in the text whenever appropriate.

[13] A problem with pieces reporting on NGO positions may be their inevitably largely reflecting the priorities of the NGOs referred to, which happened to be predominantly Northern and environmental.

Table 2: CC Impacts on DCs. DC Media Coverage

	Sources	*w/o NGO references*	*with NGO ref.*
Argentina	*Buenos Aires Herald, El Diario de La República*	●	●●○○
Brazil	*Folha de Sao Paulo, Gazeta Mercantil, Trigonet*	●○○○	●○○
Cameroon	*Le Messager*	●●●	
China	*Asia Times, Legal Daily*		●●
Colombia	*El Espectador*		
Côte d'Ivoire	*Fraternité Matin*	●○	●○
Kenya	*East African Standard*	●	○
Namibia	*NAMPA*	●●	
Nepal	*Kathmandu Post*	●●	○○
Philippines	*Bandillo ng Palawan*		●●
Senegal	*PANA*	●●●●●○	●●
South Africa	*Buanews, Business Day, Sowetan Sunday World*	●●●	
Zambia	*Times of Zambia, Zambia Daily Mail*	●●●	●○
Zimbabwe	*The Daily News*	●	●●

Main source: *International Institute for Journalism*, www.dse.de/iij/cop7news.htm



This suggests that – in contrast to their Northern colleagues – Southern media correspondents consider the vulnerability of developing countries to climate change impacts to be an issue of importance and of interest to their target readership. More than that, the material reveals – as witnessed in Patrick Mwale's headline: 'Africa is punished for the sins of the rich nations' – that this developing country impact issue is indeed regarded as a North-South equity problem.

These pieces may thus not necessarily be indicative of a Southern perspective, as is witnessed in the following quotation: 'There is very little North-South NGO interactions on climate change. The few North-South NGO interactions that take place have not resulted in NGOs speaking with one voice in the climate change debate. This is not to say that NGOs of the North should have the same priorities as NGOs of the South and vice versa. Another major concern is the lack of understanding of each other's view points, and general lack of organisation among NGOs.'[Hesphina Rukato (South Africa), 'Popularizing the Climate Change Debate', *Point de Vue: Bulletin Africain*, n° 14 hors série octobre 2001] But without further analysis, this has to remain a mere conjecture.

2.2 Ministerial Statements

Developing Country Mitigation Commitments

Ministerial statements are part and parcel of the ceremonial fabric of COP sessions. It is quite usual for a large number of Parties to feel a need to 'show the flag' during the high-level segment of the session. At COP7, 83 speakers[14] took the floor for a total of 12 hours, covering about half of the three day high-level meeting. But why should these statements be considered in the present context?

The largely ceremonial nature of this procedure makes it rather peripheral in the actual negotiations, and the shortage of time allocated to individual Parties, all contribute to making this high-level segment a perfect forum for communicating general policy positions, not necessarily to the audience in the hall, but to the outside world and, particularly, the relevant domestic constituencies. This is not to say that this forum must be used in this way – China, for example, focussed almost exclusively on the technical issues under negotiation – but it does suggest that if a government chooses to raise an issue prominently in its statement, it wishes the world to know that it considers this issue to be of considerable concern.

However, when interpreting these statements, one has to keep in mind that – true to the maxim 'absence of evidence is not evidence of absence' – the converse does not hold: a failure to mention an issue (prominently) does not necessarily mean that the issue is considered unimportant. After all, it is well-known that the main reason for the current US administration's rejection of the Kyoto Protocol is 'because it exempts 80 percent of the world, including major population centers such as China and India, from compliance'[15] – a stance forcefully supported by the Australian government.[16] And yet the statement by the US Under Secretary of State for Global Affairs, Paula J. Dobriansky, did not mention this avowed key concern of her administration with a single word. Indeed, given the equally well-known sensitivity of many G77 and China countries to even raising the issue of additional developing country commitments – re-affirmed explicitly during the high-level segment by Malaysia[17] and Saudi Arabia[18]

[14] 73 on behalf of Parties or Party Groupings, 10 Observer States, Inter- and Non-Governmental Organisations (IGOs, and NGOs).

[15] President Bush, 13 March 2001; http://www.whitehouse.gov/news/releases/2001/03/20010314.html

[16] 'I think the Bush Administration is absolutely right to take a very strong position [on developing country emission targets] ... It is no solution at all ... if China and India and Brazil can go ahead and pollute the environment to their hearts' content because we're all feeling a bit sorry for them'[Australian Foreign Minister Alexander Downer in 'Downer backs Bush backflip on greenhouse', by Lenore Taylor, *Australian Financial Review*, 26 March 2001].

[17] 'Malaysia would like to express our concern on the numerous repeated but unwarranted calls from some Annex I countries for increased commitments from developing countries. Such action, is not only counterproductive but ignores the various initiatives undertaken by developing countries to address issues on climate change. We believe that they should be the first to provide good examples in the fulfilment of their commitments to the Convention and should not shy away from ratifying the Protocol.'[Dato' Zainal Dahalan, Deputy Minister of Science, Technology and the Environment, Malaysia, 8 November]

[18] 'We completely reject calls made by some industrialized countries on developing countries, other than those provided for in the Convention or the Kyoto Protocol, to take voluntary or mandatory commitments either in quantities or timescale.'[Ali Al-Naimi, Minister of Petroleum and Minerals Resources, Saudi Arabia]

– it is not particularly surprising that no Annex I country (bar a rather over-optimistic Ukraine[19]) chose to raise this issue in its ministerial statement.

Not all non-Annex I countries were as forcefully opposed to discussing developing country emission targets. Kazakhstan, for one, proposed an amendment to add itself to Annex I (for the purposes of the Kyoto Protocol[20]), indeed he stated explicitly their intention 'to determine and undertake quantitative obligations of greenhouse gas emissions for the first commitment period' not later than 2005.[21] Others, such as Bangladesh and Zimbabwe,[22] did acknowledge the issue of future commitments, but only as embedded in the context of the principle of 'common but differentiated responsibility', enshrined in the Convention. The Bangladeshi statement contains an elaboration on this principle which is worth quoting in full in this context:

> ... as per the agreed-upon principle of 'common but differentiated responsibility,' we hope that the Annex I Parties will live up to their binding commitments under the Protocol. We believe the question of equity should relate
>
> - to the right to development,
> - to use of resources on a per capita basis for a quality living,
> - to emissions entitlements, and
> - to the distribution of funds for mitigation, adaptation and capacity building.
>
> The principle of equity is specially important as the Protocol moves towards the 2nd commitment period and developing countries begin to undertake emission reduction programs. We think all developing countries should respond to this need of reducing emissions of GHGs, but the issue of equity and justice must be adopted by the global community when allocating responsibilities to the developing countries.[23]

Most developing countries, however, did not mention future emission targets at all. Of the 'Big Three' – Brazil, China and India – only Brazil chose to highlight the issue of future emission targets by asserting 'We will be looking forward to Annex I Parties in 2005 demonstrating progress in reducing their emissions. We will be looking forward to the development of an objective basis for the negotiation of their [= Annex I (*sic*!)] quantitative emission limitation and reduction objectives for the second commitment period.'[24]

In short, emission mitigation targets for developing countries did not figure prominently in the statements of the high-level segment. Industrialised countries may have largely felt the topic to be too sensitive and not sufficiently relevant for the

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[19] 'We can neither accept the entrustment of additional commitments onto the economies in transition. At the same time we believe, that there is no obstacle for the enlargement of the number of those countries that would have concrete commitments on the reduction of greenhouse gases emissions.'[Serhii Kurykin, Minister of Environment and Natural Resources, Ukraine, 7 November]

[20] '[U]pon ratification of the Kyoto Protocol by Kazakhstan and its entry into force, Kazakhstan becomes a Party included in Annex I for the purposes of this Protocol [but] will continue to be a Party not included in Annex I for purposes of the Convention.' Advance version of the decisions and other action adopted by the COP, http://unfccc.int/cop7/documents/accords_draft.pdf

[21] M.A. Turmagambetov, Head of Kazakh Delegation.

[22] 'We should send a message of hope not despair to Johannesburg. One important part of that message is bringing the Kyoto Protocol into force and reviewing faithfully the adequacy of commitments to reduce emissions, bearing in mind the Principle of "Common but Differentiated Responsibility"' [Francis D. Nhema, Minister of Environment and Tourism, Zimbabwe].

[23] Sunil Kanti Bose, Deputy Secretary, Ministry of Environment and Forests, Bangladesh.

[24] Ronaldo Mota Sardenberg, Minister of Science and Technology, Brazil. Note that while the Bangladeshi statement could be interpreted as favouring a per capita distribution of assigned amounts, Brazil explicitly endorsed its own proposal: 'In this regard [2nd commitment period targets], we will be working actively to help organize the workshop on the scientific and methodological aspects of the Brazilian Proposal as a contribution to the objective determination of the share of responsibility of each country for causing the global change in climate.'

Box 1: COP7 High-level Segment (November 2002). A Message, a Statement, and a Declaration

Message by UN Secretary General Kofi Annan, 7 November

You meet to further the global fight against climate change. And you come together in the understanding that climate change is not just an environmental issue, but is also a fundamental development issue. Its adverse impacts endanger economic and social progress. And our response to it will require significant, long-term changes in economic and social behaviour.

This is the first Conference of the Parties to the climate change convention to take place in Africa. African nations have contributed little to the build-up of greenhouse gases in the atmosphere. But like other poor countries, their reliance on agriculture, forestry and fisheries, as well as their vulnerability to natural disasters, leaves them most exposed to the consequences.

Statement by Michael Zammit Cutajar, Executive Secretary, UNFCC, 7 November

It would be naive to ask governments to put their perceived economic interests aside. I hope, however, that a better appreciation of the costs of inaction and of the economic benefits of innovation in technologies and in lifestyles will generate a more balanced economic vision.

This convention is not about conservation and pollution abatement in the usual sense of those terms. It is about the transformations that will bring about greater efficiency in the use of resources and greater equity in access to them. The market is a guide to efficiency. But governmental intervention and corporate responsibility are necessary to promote equity. Without equity, the fruits of efficiency will not endure. This is not just a convention on the global environment. It is a convention on the sustainable development of the global economy.

The Marrakech Ministerial Declaration

The Ministers and other heads of delegation present at the seventh session of the Conference of the Parties to the United Nations Framework Convention on Climate Change,

2. *Remain* deeply concerned that all countries, particularly developing countries, including the least developed countries and small island States, face increased risk of negative impacts of climate change;

3. *Recognize* that, in this context, the problems of poverty, land degradation, access to water and food and human health remain at the centre of global attention; therefore, the synergies between the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, and the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, should continue to be explored through various channels, in order to achieve sustainable development;

4. *Stress* the importance of capacity building, as well as of developing and disseminating innovative technologies in respect of key sectors of development, particularly energy, and of investment in this regard, including through private sector involvement, market-oriented approaches, as well as supportive public policies and international cooperation;

negotiating round at hand. Developing countries may have been similarly motivated – as reflected in the opening statement of the G77 and China[25] – and/or they may have had another overriding priority, namely the issue of climate change impacts on their development prospects, as witnessed in the statement by Samoa on behalf of the 39-member Alliance of Small Island States (AOSIS):

> Now that we are on the verge of completing the Buenos Aires Plan of Action we must turn our energies to the next steps. We must finally review the commitments under the regime and formally acknowledge they are inadequate to achieve the Convention's objective. We must

[25] 'I deem it necessary to underline right here, on behalf of the Group of 77 and China, a point of caution - that the reports before us, or for that matter, items of the agenda, should not be utilized in any possible manner to inject into our deliberations the rather stale question of new commitments for the developing world. Neither COP-7 nor the Johannesburg Summit is the proper forum for such an untimely suggestion, which, if nothing else, would prove extremely divisive in an atmosphere requiring good-will and disposition to consensus.'[Bagher Asadi, Chairman of the Group of 77 (Islamic Republic of Iran), at the Opening Meeting of COP7, 29 October; http://www.g77.org/Speeches/102901.htm]

ensure that our growing understanding of climate change and the scope of its impacts begins to shape broader agendas, and, in particular, the outcomes of the World Summit on Sustainable Development.[26]

Developing Country Climate Change Impacts

The high-level section of COP7 began with two forceful reminders that developing country climate change impacts are not a peripheral issue – the message of UN Secretaty General Kofi Annan during the welcoming ceremony and the farewell statement of Michael Zammit Cutajar, the outgoing Executive Secretary of the UNFCCC – and ended in the Marrakech Declaration with an even greater emphasis on this issue (Box 1) as input for the 2002 World Summit of Sustainable Development (WSSD) in Johannesburg. But was the 'continued deep concern' expressed by Ministers and other heads of delegation in this final Declaration to be taken at face value, or was it simply unavoidable diplomatic lip-service to the WSSD process? Given the diversity of authors involved, the answer is most likely 'a bit of both'.

As with the issue of developing country mitigation targets, it should be possible to obtain some indication of the Parties' concern about developing country vulnerabilities either from their individual high-level statements or from statements delivered on behalf of recognised groupings and alliances.[27] A triage of the statements delivered along the line of the one carried out in the previous sections about media coverage – with all its limitations – does provide an interesting picture of the geographical (Figure 1) and socio-economic distribution of concern about climate change impact on developing countries. According to this triage, 29 of the 73

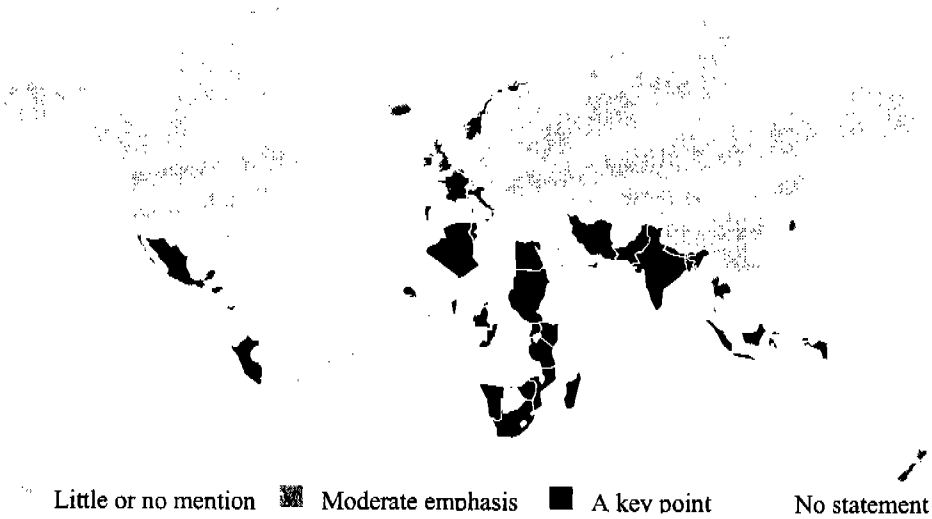

Figure 1: Ministerial Statements. Climate Change Impacts on Developing Countries

statements delivered at the high-level segment contained little or no mention of the issue, 15 gave it moderate emphasis, while 29 registered strong concern. In light of the fact that a failure to mention the issue cannot necessarily be equated with not being concerned, the main conclusion to be drawn is from the 29 Parties registering strong concern. Given the geographical distribution of expected climate change

[26] Tuiloma Neroni Slade, UN Ambassador, Samoa, on behalf of AOSIS.
[27] For definitions, see http://www.unfccc.int/resource/process/components/participants/parties.html

impacts, and the effect of poverty on the capacity to adapt, it is not particularly surprising that the vast majority of these concerned Parties hail from 'the South', both in the geographical and socio-economic meaning of the term.

The Oxford English Dictionary lists a variety of meanings for 'triage'. The categorisation of statements graphically represented in Figure 1 is probably best reflected by 'the action of sorting samples ... according to quality'. Yet there is a second meaning of the term which, taken metaphorically, seems to be more apposite: 'The assignment of degrees of urgency of need in order to decide the order of treatment of a large number of injured or ill patients.' To carry out this sort of medically inspired 'triage' in the current 'diagnostic' context warrants a closer look at the content of the statements delivered.

ANNEX I

Central Group 11 and the Umbrella Group

The countries designated in the Convention as 'economies in transition' (EITs) – the Central Group 11 (CG11) plus the Russian Federation and the Ukraine – displayed by far the most uniform level of concern about developing country impacts by simply not mentioning the issue at all.[28]

Russia and the Ukraine are actually members of a loose coalition of Annex I Parties – commonly referred to as the 'Umbrella Group' – with a somewhat fluctuating membership. At the time of writing, the FCCC secretariat's own informal Umbrella list[29] comprised, in addition to the two mentioned economies in transition, Australia, Canada, Iceland, Japan, New Zealand, Norway, and the United States. Given the purpose of this Annex I grouping – advocacy in the Kyoto Protocol negotiations – it could be argued that with their recent withdrawal from the Protocol, the US have also given notice to the Umbrella. However, instead of creating yet another slightly awkward group designation ('Umbrella and US'), the American position is discussed at this point under the Umbrella heading – 'for old time's sake', as it were.

Apart from Australia, all Umbrella countries decided to make their voice heard at the high-level segment, and there was a discernible difference between the big and the small members with respect to the issue of impending developing country impacts.

One of the reasons given by New Zealand as to why they intend to ratify the Kyoto Protocol was: 'Because New Zealand is part of what we call Oceania, and because Oceania includes many neighbours and friends of ours who live on low-lying Pacific atolls. These are small nations whose very existence is threatened by the prospect of rising sea levels.'[30] Iceland[31] and Norway[32] felt equally compelled to give the issue

[28] Bulgaria (on behalf of CG11, Cyprus and Malta), Croatia, Romania, Russian Federation, Ukraine. Croatia does, however, mention its own vulnerability.

[29] http://www.unfccc.int/resource/process/components/participants/parties.html

[30] Pete Hodgson, Minister of Energy, of Fisheries, of Research, Science and Technology, New Zealand.

[31] 'It is very appropriate that this Conference is being held on African soil. Many African countries are among the most vulnerable to climate change.'[Siv Fridleifsdottir, Minister for the Environment, Iceland]

[32] '[Human induced climate changes] are a threat to political stability. Living conditions for millions of people will decline. More frequent or severe droughts, storms or other natural disasters mean that people in vulnerable places will be dislocated. And the poorest will be those hardest hit.'[Børge Brende, Minister of the Environment, Norway]

some mention, unlike Japan and Canada whose statements were, like those of the EIT members, void of any reference to DC impacts.[33]

The most intriguing statement under the Umbrella was no doubt that of the United States. Apart from re-iterating the well-known views of the Bush administration on the Kyoto Protocol[34] and climate change,[35] US Under Secretary Dobriansky delivered a passage which, while not explicitly mentioning Southern vulnerability, could clearly be of the utmost importance to it:

> The United States believes that economic development and poverty alleviation are key to protecting the global environment. Environmental protection is neither achievable nor sustainable without opportunities for continued development and greater prosperity. Through prosperity nations can sustain greater investments in energy efficiency and environmental technologies.
>
> In sum, our collective, long term objective must be to create a truly global approach that stitches together actions by all countries into a tapestry of national action and international cooperation.

To evaluate this position, it may be useful to view it against the background of the larger policy context of the present US administration. The administration's reported proposal of a substantial cut in developing country climate change assistance,[36] their refusal to consider additional disaster relief for developing country climate change impacts,[37] their behaviour in drafting the Marrakech Declaration,[38] and their opposition to establishing an LDC expert group,[39] all seem to fit rather uneasily with the position taken by Under Secretary Dobriansky in her high-level statement.

The view expressed in her statement is, I believe, a valid one, and my hope is that its implementation will go beyond the main developing country objective of the recent *Initial Report* of the US Cabinet-level Climate Change Policy Review: exporting climate-friendly technology.[40]

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[33] Canada, it has to be said, did mention climate change impacts, but not in the context of Southern vulnerability: 'Climate change is a reality in Canada. In describing the impacts of climate change the IPCC notes the great vulnerability of northern latitudes.'[David Anderson, Minister of Environment, Canada]

[34] 'the United States has no intention of discouraging the work of other nations on the Kyoto Protocol, but will protect legitimate U.S. interests.'

[35] 'The United States is already moving ahead to develop a science-based approach to climate change...'

[36] 'While asking Congress for nearly $4 billion to address climate change, roughly the same as last year, [President] Bush proposes reducing assistance to other countries by $41 million from last year's $165 million. ...His budget would reduce money for programs intended to help countries such as Brazil, India, Indonesia, Mexico, the Philippines, Poland, Russia, South Africa and Ukraine increase their industrial development with only minimal contributions to global warming.'[Washington Post, 7 July 2001]

[37] When asked whether, in light of their withdrawal from the Kyoto Protocol, the Bush administration would at least consider an increase in disaster relief for least developed countries, the State Department's Senior Climate Negotiator, Harlan L. Watson, answered with a simple and quite unambiguous 'No!'[London, Chatham House Kyoto Conference, 2 October 2001]

[38] 'A U.S. delegation was ... involved in drafting a statement that would be sent from Marrakesh to the World Summit on Sustainable Development in Johannesburg, South Africa, next September. The U.S. aim was to limit references to climate change issues and ensure that the focus was on social, economic and other environmental issues.'
[CNN, 10 November: http://www.cnn.com/2001/TECH/science/11/10/climate.talks/index.html]

[39] See Interview with the LDC group leader, Mama Konate (Box 3).

[40] 'Energy use in developing countries is expected to account for three-quarters of the increase in global energy use between now and 2050, and our ability to effectively disseminate and adapt appropriate technologies is key to the climate change effort. Therefore, the United States will: Explore ways of

The Environmental Integrity Group and the European Union

During the negotiations in June 2000, the Environmental Integrity Group (EIG) – the first grouping to cut across the Annex I/non-Annex I divide – was formed by Mexico, the Republic of Korea and Switzerland on the basis of a common interest in ensuring the environmental integrity of the Kyoto Protocol. Since all the members chose to represent their views directly, there was no need for a group position. Switzerland – unusually heading the list of speakers at the high-level segment by virtue of having sent the only head of state – chose to focus on the potential for bridging the North-South welfare gap through acceptable forms of globalisation. It did not explicitly refer to the Southern vulnerability issue, in contrast to the non-Annex I members, who gave the issue some prominence, as witnessed in Korea's expression that 'developing countries are ever more vulnerable to the adverse effects of climate change ... and yet these countries are the least equipped to deal with such urgent problems...'[41]

The statement on behalf of the European Union (EU) – delivered by the Belgian Presidency – stressed that the envisaged input of the COP to the WSSD (the Marrakech Declaration, see Box 1)

> should be a strong political message, stressing that addressing climate change, both its mitigation as well as adaptation to its adverse effects, is indeed one of the major challenges in sustainable development. .... The latest IPCC report predicts that climate change will exacerbate water shortages in many water-scarce areas of the world, is projected to increase threats to human health, alter ecological productivity and biodiversity and increase the risk of hunger in vulnerable populations. The impacts of climate change will fall disproportionately upon developing countries and poorest persons within countries, and will lead to changes in GDP estimated to be negative for most countries. Moreover, water supply, apart from being a major concern for human beings is a major issue for international peace and security.[42]

All of the individual member statements endorsed this message, and most of them did include a reference to the seriousness of the issue of Southern impacts. Indeed, two of the EU 'cohesion' members, Ireland and Portugal, made the issue and its equity implications one of their major concerns. Ireland thus recognised that

> many developing countries, including here in Africa, make a small contribution to the causes of climate change but are particularly vulnerable to its impacts. There is a burden of responsibility on developed countries to ensure that the developing world is supported in addressing and adapting to the impacts of climate change. Addressing climate change in developing countries also means addressing poverty and creating the capacity for sustainable development in all regions of the world.

While Portugal, which soon after the COP ratified the Kyoto Protocol,[43] delivered one of the strongest messages of concern of all the high-level contributions:

> Efforts underway to promote sustainable development and to alleviate poverty in Africa can be constrained by the vulnerability of some parts of this continent to the consequences of climate change. Desertification, water scarcities and extreme weather events have also to be attentively considered and be part of our effort. ...

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helping countries in the Western Hemisphere and throughout the world build the technical and policy foundations for a cleaner energy future. This effort will build on the recommendations of the President's National Energy Policy, and will be guided by the strategic plan of the Clean Energy Technology Exports Working Group, a Federal interagency task force chaired by USAID and the Departments of Commerce and Energy.'

[41] Myung-Ja Kim, Minister of Environment, Republic of Korea.

[42] Olivier Deleuze, Secrétaire d'état pour l'Energie et le Développement Durable.

[43] LISBON, December 19, 2001 (Xinhua via COMTEX) 'The Council of Ministers of Portugal ratified on Wednesday the Kyoto Protocol'.

> Recent conclusions of the Third Assessment Report of the IPCC underlined that the effects of climate change are already with us. Links between climate change and economic, social and ecological dimensions of sustainable development have become more obvious. It is not easy to address climate change, it will certainly not be without cost, but it also offers opportunities and opens avenues for the economy and employment policy. Low cost mitigation and adaptation actions can, if appropriately designed, promote sustainable development and equity both within and across generations. Furthermore negative consequences of climate change would cost much, much more.
>
> We must give special attention to the efforts of climate change in developing countries, considering that the adverse effects will fall unevenly upon them. We believe that the establishment of the funds agreed in Bonn, and the potential of the clean development mechanism to stimulate technical assistance, transfer of technology and capacity building to promote the environmentally sound projects can help to adapt to climate change and to meet the need of developing countries. We are also deeply engaged in the efforts to adapt and to limit the negative effect of climate change and to promote sustainable development.[44]

NON ANNEX I

Group of 77 and China

It is no secret that the 133 member 'Group of 77 and China' is not a particularly homogeneous coalition. Apart from general developmental differences (see Box 2) there are additional conflicts of interests peculiar to the climate change agenda, such as the well-known tensions between oil-exporting and small island members. It fell to

Box 2: The Group of 77 and China

Comprising roughly two-thirds of all the Parties to the FCCC, the G77 has the potential of being the dominant player in climate change negotiations as a whole, simply on grounds of numerical superiority. However, this potential strength in numbers can only be realised if the numbers in question 'pull in the same direction'. The failure to actualise this potential is largely due to the multifarious positions and interest groups within the G77 membership. This heterogeneity, however, is not confined to climate change issues. Originally designed to represent the economic interests of developing countries, it now includes members of all levels of economic development. This becomes evident if we look at the distribution of its membership according to the UN Human Development Index (HDI): far from having members only from the lower end of the development spectrum, the G77 membership is divided almost evenly into Low- (35 per cent, incl. India), Medium- (35 per cent, China) and High- (29 per cent, Brazil) development countries.

Source: Ulrich Bartsch and Benito Müller, *Fossil Fuels in a Changing Climate*, Oxford: OUP, 2000, pp.246f.

the Islamic Republic of Iran, as chair, to deliver the high-level statement on behalf of the Group. Iran, an oil-exporting country and OPEC member, has earned the praise of the Parties of both North and South for its exemplary chairmanship during the difficult negotiations at COP6bis in Bonn and COP7 in Marrakech. Given the heterogeneous composition of the Group, Iran's statement on behalf of G77 and China did not venture far beyond the particular issues of the day (the nature of the compliance regime etc.), except for two points for which consensus within the Group may have been relatively easy, namely a strong endorsement of Agenda 21 and an equally strong rejection of additional developing country commitments:

> [I]t should be reaffirmed, beyond doubt or illusion, that neither COP7 nor the Johannesburg Summit is the proper forum for addressing the question of "new commitments for the developing countries".
>
> And our message to WSSD; a clear, potent and unmistakable message, will be on the compelling and urgent need for genuine multilateralism across the board and international cooperation for long-term development, including the necessity of the full implementation of

[44] Rui N. Gonçalves, Secretary of State, Ministry for Environment, Portugal.

> the Agenda 21 as well as a concomitant future-looking vision for serving the cause of sustainable development on a global scale.[45]

The 'Big Three': Brazil, China, and India

The perception amongst some of the most vulnerable constituencies in least developed countries and small island states has been that 'the Big Three' members of G77 and China – Brazil, China, and India – have not always been as supportive to their vulnerability concerns as was hoped.[46] Keeping in mind the general *caveat* concerning the drawing of conclusions from an absence of evidence, the fact is that, of the three, only India emphasises the issue in its statement:

> The third Assessment Report of the IPCC clearly brings out the fact that the impacts of climate change will effect the developing countries more adversely than the developed countries, thereby further exacerbating the inequities. Some of these impacts are already visible. Food security and water availability will be a cause of serious concern. Floods, droughts, cyclones and storms, which have been of serious concern to developing countries, are likely to increase in frequency and intensity, further threatening the livelihoods and survival of large populations in the developing countries. Substantial resources will be needed by the developing countries to adapt to these impacts. Adaptation is therefore of fundamental concern to the developing countries. *The efforts so far have been focussed on mitigation. In the coming decades, adaptation needs to be given much greater attention.* The next decade, Mr. President, therefore should see concrete implementation of existing mitigation commitments and active consideration and action on adaptation to the adverse impacts of climate change.[47]

This passage of the statement by the Indian Minister for Environment and Forests, Thiru T.R. Baalu, is of importance not merely because of its succinct characterisation of the climate impact problem, but more importantly because of its programmatic character, to be echoed – as we shall shortly see – by many of the most vulnerable Parties to the Convention.

Organization of Petroleum Exporting Countries (OPEC)[48]

Of the eleven OPEC members, seven chose to address the high-level segment, as did the organization's Secretary General, Dr Alí Rodríguez Araque.[49] As depicted in Figure 2, not all OPEC countries attached the same importance to the issue of climate change impacts on developing countries.

Half of the statements – i.e. Kuwait, Nigeria, Saudi Arabia, and the Secretariat – contained little or no mention of climatic impacts, focussing instead on the economic

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[45] Massoumeh Ebtekar, Vice-President, Iran.

[46] 'Au cours des discussions sur ces deux articles [Art. 4.8 and 4.9 concerning climate change impacts on developing countries], il y avait des contradictions au sein du Groupe des 77 et la Chine de même qu'au sein du Groupe Africain et entre d'une part, les «grands» pays en développement (Chine, Brésil, Afrique du Sud, Nigeria, Arabie Saoudite, etc.) et les pays développés d'autre part. Les sujets les plus litigieux entre ces derniers portent sur la notion de compensation à payer aux pays en développement producteurs de pétrole ainsi qu'à celle d'assurance contre les impacts des changements climatiques. Compte tenu de la lenteur, voire du blocage des négociations sur ces deux aspects, les «grands pays» en développement ne souhaitaient pas que des décisions significatives soient prises concernant les pays les moins avancés, de crainte de compromettre leur chance de parvenir à un compromis avantageux sur les points litigieux avec les pays développés.'[Mama Konate (Mali), 'Les Pays les Moins Avancés (PMA) dans la négociation : des blocages mais aussi des avancées', Point de Vue: *Bulletin Africain*, n° 14 hors série octobre 2001]

[47] Emphasis added.

[48] http://www.opec.org

[49] No statement was made by Iraq (not surprisingly, not being a Party to the FCCC), Libya, Qatar, and Venezuela.

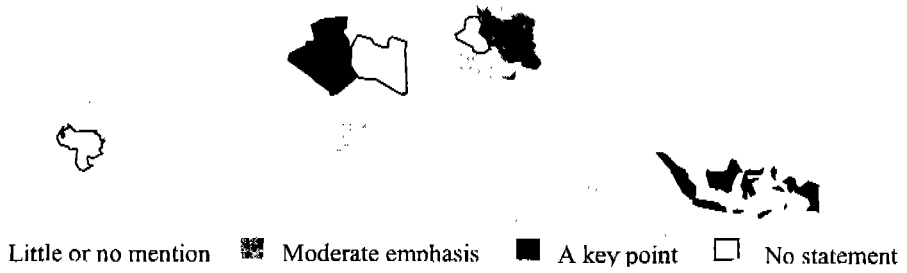

Figure 2: OPEC Ministerial Statements. Climate Change Impacts on DCs

impacts of emission mitigation measures on oil-exporting countries, an issue most poignantly expressed by Saudi Arabia:

> In our opinion, industrialized countries should start, as of now and without even waiting for the Kyoto Protocol to enter into force, to adopt policies and measures that would minimize their negative impacts on developing countries which depend to a large extent on petroleum exports. This matter should be given absolute priority since our developing countries are not prepared to shoulder a burden that is more than their fair share as stated in the Convention and the Kyoto Protocol principles.[50]

Iran (already mentioned as chair of G77 for 2001[51]) and the United Arab Emirates[52] gave moderate emphasis to the issue, while both Algeria and Indonesia did see the issue as meriting strong emphasis.

> As an archipelago of more than 17,000 islands with the coastline of around 80,000km, Indonesia will be adversely affected by any small change in sea level rise. More than half of Indonesia's employment is in agricultural sector, one of the most vulnerable and climate-dependent sectors. ... Indonesia will face threatened food security and water scarcity if we let climate change get worse. [53]

Indonesia, the Chair of Preparatory Committee for the 2002 World Summit on Sustainable Development (WSSD), also emphasised that 'Our input to WSSD should transpire our understanding of the climate change and means to combat its adverse effects. Climate change is not merely an environmental agenda but also a means to provide new pathways to sustainable development'

The Most Concerned: AOSIS and LDCs

In light of their vulnerabilities, it is not surprising that the statements from small island states (AOSIS) and LDCs – with the exception of the Gambia and Togo – focussed on climate change impacts as their issue of greatest concern. And while there were others – even from the North[54] – who shared this sentiment at least in part, the fact remains that about half of the statements classified as strongly concerned were members of these groupings.

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[50] Statement by Ali Al-Naimi, Minister of Petroleum and Mineral Resources, Saudi Arabia; delivered by Mohammed S.S. Al-Sabban (Ministry of Petroleum and Mineral Resources).

[51] Iran's successor in this function is Venezuela, which means that for the third time in a row, the position is held by an OPEC country (Nigeria, Iran, Venezuela).

[52] 'as a developing country and as a coastal country we are also very susceptible to the effects of climate change'[Hamid A.R. Al-Mudfah, Minister of Health, UAE; as translated simultaneously from the Arabic by the official COP staff].

[53] Daniel Murdiyarso, Deputy Minister for the Environment, Indonesia.

[54] Ireland and Portugal.

Box 3: Interview with the LDC group leader, Mama Konate
by Sudha Shresta, *Kathmandu Post*, Kathmandu, Nepal
Question: Where do the LDC's stand in the Marrakech Climate conference?
Konate: We worry about three major points. Following the Bonn agreement, decisions have to be taken on these points:

- firstly, the establishment of the LDC Experts Group to help the LDC countries to prepare National Action Plans for Adaptation (NAPAs),
- secondly, the adoption of guidelines for the preparation of National Action Plans for Adaptation
- and finally, guidelines for operating the entity of the LDC fund.

Question: Are developed countries interested in your proposal?
Konate: Developed countries showed much interest in our concerns in Bonn. But here in Marrakech we are facing much resistance in the negotiation process. Some big countries like the US are objecting to setting up a separate LDC Experts Group. They argue that the existing Experts Group can address the LDCs concerns.
Question: Do you agree?
Konate: The article 4.9 of the Climate convention stipulates that the LDCs have specific needs and special situations which should be taken into account differently. On top of that, we think the existing group of experts will not be able to address our problems as they have lots of responsibilities and they won't have enough time to devote to our issues.

Source: www.dse.de/iij/cop7news.htm#29

In the 'triage' of the COP7 high-level statements undertaken for the purpose of this study, roughly 40 percent were classified as *very concerned* with the problem of climate change impacts on the developing world. However, this figure may be misleading about the level of support for this position, since it ignores the fact that some of these statements were actually delivered on behalf of country groups, and not just the delivering Party. Accordingly, one might wish to give more weight to statements made on behalf of the groupings recognised under the Convention, in order to reflect also countries which did not feel the need to make an additional statement over and above the one given on behalf of their group.

In short, the relative strengths of the positions are probably better reflected by turning to a 'thick' statistics, where those members of groupings which have not themselves made a statement are assigned the level of concern expressed in their group statement.[55] In doing so, the 100 percent baseline of statements actually delivered (73) is extended by proxy, as it were, to 172 countries, with 87 (just over half) expressing – directly or by proxy – a strong concern about Southern climate impacts.

Of course, one could argue that this nation-level poll remains inadequate, after all why should the American or the Chinese position be given equal strength in aggregation as that of Liechtenstein. The only remedy for this would seem to be to weight the position expressed with the population figures represented.

With this sort of population weighted 'thick data', we find that of 5.5bn people represented by high-level statements (actual or proxy), roughly 40 percent were represented as having high climate impact concerns for the developing world. Having said this, one should not ignore the fact that of the 'Big Three' developing countries, this figure only includes India. If one assumes that Brazil and China actually do see

[55] AOSIS = 2, CG11 = 0, EU = 1, OPEC = 0, LDC = 2, G77+China = 1. Note that even though the LDC group did not have an official group statement (although Senegal claimed to be speaking on their behalf), it seems safe to assume that they would all be at level 2. Note also that if there is a conflict between group levels (e.g. OPEC and G77), the level of the smaller group was chosen.

these impacts as a major problem, then the 'highly concerned' level rises to over 60 percent.

Although not itself represented as a recognised grouping, the Commonwealth must be singled out as a coalition of countries particularly concerned with the issue under consideration. Of the 53 Commonwealth members who expressed their views at the high-level segment of COP7 – either by themselves or through one of the recognised alliances – (i.e. all except Australia), three quarters (41) consider Southern climate impacts to be a key concern, and if one turns to the population statistic, this high level of concern rises considerably (over 80 percent). In short, potential climate change impacts are no doubt going to be at the top of the Commonwealth agenda for years to come.[56]

As pointed out earlier, this type of numerical account relies on a subjective triage. It may thus be useful to provide some samples of the sort of messages that were classified as exhibiting high concern by way of some quotations from the two most concerned regions: Africa and South Asia, which will also provide a good indication of the inequity perceptions prevailing in these countries:

Benin Certes, les pays développés, qui ont accédé à la prosperité aux dépens de l'environnement et du climat, sont économiquement bien armés pour faire face aux calamités naturelles de tout genre. ... A l'inverse, les pays en développement, et singulièrement les pays les moins avancés, moralement très peu responsable des émissions de gas a effet de serre, sont malhereusement et injutement très vulnérables aux conséquences de l'évolution négative du climat.

Djibouti [L]a République de Djibouti est un pays faible émetteur de Gaz à Effet de Serre et que ses émissions sont entièrement absorbées par les puits. ...Mais ce sont les résultats de létude de vulnérabilité et d'adaption qui sont les plus préoccupants. ... L'adaptation aux changements climatiques est en effet la question la plus importante pour les Pays en Voie de Développement et en particulier les Pays les Moins Avancés.

Madagascar [D]epuis quelques temps, notre pays voit ses plages littéralement disparaître, ses paysans ne plus se retrouver dans leurs calendriers agricoles, ses zébus maigrir de par la dégradation des pâturages, ses villages ravagés par les cyclones...

Namibia It is also imperative that peace and stability be considered as vital components of a vibrant climatic change package through which sustainable economic development can be implemented.

Namibia with its recurrent drought and desertification is very much at risk from the impacts of climate change on its fragile environment. Climate change will be one of the most serious, and potentially costly, of all issues affecting our national development.

Climate change cannot be left to the poor nations who live on the margin of global economy. The right to economic development and the need to eradicate poverty need to be recognized as enshrined in the principle of common but differentiated responsibilities under the convention.

South Africa [the Nairobi meeting of African ministers] has reaffirmed that poverty eradication is an indispensable requirement for sustainable development.

The Kyoto protocol is but one building block towards avoiding the devastating consequences of greenhouse emissions. The resultant poverty as a result of unpredictable weather patterns, floods, desertification amongst others goes against the goal of sustainability.

One of the key areas that need attention for developing countries is effective funding and training on newly transferred and acquired clean technologies as well as capacity building needs on all climate change related needs. This would also mean that there will be a transfer of knowledge and strengthening of institutional capacities in the area of science, technology and environment which will enable such institutions to design and implement appropriate adaptation and mitigation measures in the event of adverse effects of climate change.

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[56] For a more detailed analysis, see *Climate Change and Commonwealth Nations*, by Clive Hamilton, Hal Turton, and Paul Pollard, Discussion Paper No 40, The Australia Institute (www.tai.org.au), October 2001.

Uganda [C]limate change poses a big threat to development in developing countries, particularly the Least Developed countries. Poverty is swallowing us and climate change is one of the central factors at play. Failure to ratify the Kyoto Protocol, therefore, is to condemn Africa and the LDCs to eventual extermination since they can't afford the mitigation measures needed to counteract effects of greenhouse gases produced in the developed nations.'

Zimbabwe ... we are in one ship when it sinks we are not all going to sink. Those who have the ability to swim will survive. I happen to come from a continent which has the least ability to swim which is why I am very concerned about the sinking ship on which we all sit today. I therefore am sending this SOS message given my predicament.

Bangladesh You are all aware that the low-lying coastal and small island states are the most vulnerable group of countries. ... Monsoon flooding, cyclones and storm surges visit Bangladesh regularly. ... displacement of over 25 million people from our coastal areas due to sea level rise outnumbers the population of many individual and groups of countries. ... if warming continues to intensify, 25 to 50 percent of our rice production is likely to be reduced. This is a nightmare.

Bhutan We have always stressed that even though countries like Bhutan make negligible contributions to global warming, the impacts of climate change would severely affect us. Moreover, as a Least Developed country, we lack the capacity to respond or adapt to the adverse impacts of climate change. .... For Bhutan, like in many LDCs, the impacts will be tremendous as the majority of our populations are heavily dependent on climate sensitive activities such as agriculture, forestry and the use of water resources. any effort we make towards sustainable socio-economic development will be undermined by the adverse impacts of climate change.

Maldives The process of preparing the National Communication was not a pleasant one. The vulnerabilities that have been identified in the Communication are terrifying. The extraordinary challenge that the Maldives has presented to the global community in that Report is to enhance the Maldives' adaptive capacity, and to ensure the country's survival. ... the Maldives' share of global greenhouse gas emissions is less than a thousandth of a percent. However ... our vulnerability is among the highest.

Pakistan It is understandable that the focus of these negotiations in the past has been on mitigation. ... However, it is time that we broaden the emphasis on mitigation to include issues of adaptation. Like so many other developing countries that face real risks from considerable climatic impacts, Pakistan is very eager to see these negotiations begin addressing the issues of adaptation equally seriously. Given the relatively low level of emission cuts that Annex I countries are willing to make and therefore the increased likeliness of climate impacts becoming apparent sooner rather than later, it is all the more important that we begin addressing the concerns of the countries that are vulnerable to fluctuations in key climate variables. What have we done to assist the vulnerable countries on adaptation? What have we done in terms of capacity enhancement? What have we done in terms of technology support? Pakistan believes that these are questions that we must ask and answer.

2.3. Summary Impression

The material considered thus far – reports from, and statements delivered at the Marrakech Session of the COP – presents strong, positive and incontrovertible evidence that climate change impacts are one of the main, if not the most pressing concern among the Parties and stakeholders of the developing world, particularly those situated on the lower rungs of the welfare ladder. It also suggests strongly that this issue is seen as one of inequity, due to a disproportionality between the responsibility for, and burdens imposed by the impacts. There was also a degree of negative evidence – a failure to express concern – about the conjectured 'Northern key equity issue,' the distribution of emission targets in post-Kyoto commitment periods (although there was an unambiguous collective rejection of discussing the issue at the present juncture in time).

The Northern perspective emerging from the Marrakech material was less clear and more heterogeneous. While the media conformed rather well with the conjectured Great Divide in ignoring developing country impacts and focussing on mitigation

issues, a North-North rupture – roughly along the lines of Europe and New Zealand versus the rest of Annex I – was detectable from the ministerial statements concerning the acknowledgement of a Southern impact problem. While the issue was given moderate, indeed in some instances strong, emphasis in the 'European camp,' the rest of Annex I failed to acknowledge it as a problem, let alone as one of equity. As it happens, there was very little in the material considered on what, if anything, industrialised country stakeholders *did* consider to be the key equity issue in climate change. To gain some insight on this, let us therefore switch 'diagnostic focus' away from general statements and reports to the academic literature on this subject matter.

3. THE DIVIDE IN LITERATURE

To avoid misunderstandings, it must be made clear from the very outset of this review that critical comments levelled at the policy analysis community – in particular at those analysts interested in equity issues – are as much self-criticisms by the author as anything else. Their particular aim is not to admonish or to blame, but to highlight a strongly felt need for a re-orientation of the research agenda to reflect Southern concerns more accurately, a *sine qua non* for remaining relevant to the multilateral regime under the Framework Convention.

3.1 'Fair Weather? (Northern) Equity Concerns in Climate Change'

Among the numerous recent academic publications on equity in climate change, there is one anthology which – due to its interdisciplinary breadth and intellectual depth – is a perfect starting point for such a diagnostic review: Ferenc Tóth's *Fair Weather?*[57] The collection carries the subtitle 'Equity Concerns in Climate Change', but it seems fair – given that over 90 percent of the contributors are from the industrialised countries – to further qualify the concerns in question as being of 'Northern' origin.

Box 4: Contributions to *Fair Weather?*

Fairness Concepts and Local Experience		
1.	Fairness Concerns in Climate Change (Editor's Introduction), *F. Tóth.*	
2.	Equity Issues and Integrated Assessment, *S. Rayner, E. Malone,M. Thompson.*	○
3.	Climate Change and Multiple Views of Fairness, *J. Linnerooth-Bayer.*	●
Fairness in Economics		
4.	Empirical and Ethical Arguments in Climate Change Impact Valuation, *R. Tol, S. Fankhauser, D. Pearce*	●
5.	Applying Fairness Criteria to the Allocation of Climate Protection Burdens: An Economic Perspective, *C. Helm.*	○
6.	The Appropriateness of Economic Approaches to the Analysis of Burden Sharing, *H.A. Aaheim*	○
Fairness in Social Science		
7.	Biases in Allocating Obligations for Climate Protection: Implications from Social Judgement Research in Psychology, *V. Linneweber*	○
8.	Fairness and Local Environmental Concerns in Climate Policy, *S. Nishioka*	●
9.	Justice, Equity and Efficiency in Climate Change: A Developing Country Perspective, *P.R. Shukla*	(●)
Perspectives from Law and Political Science		
10.	Justice in the Greenhouse: Perspectives from International Law, *F. Biermann*	○
11.	Equity in International Law, *J. Kokott*	○
12.	The Regulation of Greenhouse Gases: Does Fairness Matter? *D. Victor*	○

The book focuses on intra-generational substantive issues – or issues of (intra-generational) 'consequential equity', to use the IPCC terminology – and aims to offer 'a grand tour across a broad range of social science disciplines in an attempt to explore what their paradigms and analytical frameworks can add to the overall debate on fairness in global change issues, especially climate change'.[58] Its contributions (Box 4) are classified into four categories: Fairness Concepts and Local Experience;

[57] Ferenc L. Tóth (ed.), *Fair Weather? Equity Concerns in Climate Change*, London: Earthscan, 1999.
[58] Tóth 1999:2.

Fairness in Economics; Fairness in Social Science; and Perspectives from Law and Political Science.

Fairness Concepts

In 'Equity Issues and Integrated Assessment,' Steve Rayner, Elizabeth Malone and Michael Thompson seek to create a 'map of institutional discourse and human values'.[59] To carry out this difficult task, the authors put forward an analysis of the concept of 'equity' (hence the heading 'Fairness Concepts'), partly relying on Henry Shue's by now classic taxonomy of climate equity topics, given by the following four questions:[60]

1. What is a fair allocation of the costs of preventing the global warming that is still avoidable?
2. What is a fair allocation of the costs of coping with the social consequences of the global warming that will not, in fact, be avoided?
3. What background allocation of wealth would allow international bargaining (about the first two points) to be a fair process?
4. What is a fair allocation of emissions of greenhouse gases over the long term and during the transition to the long-term allocation?

In their discussion of 'Distributional Principles and Allocational Issues,' Rayner *et al.* give a brief characterisation of 'three principles parallel to Shue's that can be applied to resolve the practical problems of making fair allocations of resources [which] emerge from the work of mathematician Peyton Young' – proportionality, priority, and parity. This is followed by a substantive commentary on particular proposals which have been cited in the literature in this context, ranging from 'contemporary or historical per capita allocations,'[61] via the 'status quo allocation,'[62] to 'an allocation which combines egalitarian and status quo/comparable burden principles'.[63] Anyone familiar with 'climate change discourse' will, of course, have recognised these as proposals for allocating emission targets. The fact is that – while (at least implicitly) referring to the climate impact burden issue by citing question 2 of Shue's taxonomy – Rayner and his associates, in their contribution, are firmly located on the Northern side of the conjectured Great Divide.

Local Experiences

Joanne Linnerooth-Bayer's 'Local Experience' contribution – 'Climate Change and Multiple Views of Fairness' – examines 'two questions of fairness in the climate change debate. Should nations continue along the path begun at Kyoto by allocating extensive resources to greenhouse gas abatement over the next decades, keeping in mind the competing demands for these resources? And, given a resolve to abate GHG emissions, what is a fair way to allocate the costs?'[64] While the first of these questions

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[59] Tóth 1999:p.35.

[60] See. Henry Shue, 'Avoidable necessity: global warming, international fairness, and alternative energy', in I. Shapiro and J.W. DeCena (eds) *Theory and Practice*, New York: University Press, 1994. The substantive difference underlying the Great Divide-conjecture is, of course, the difference between Questions 1 and 4 ('mitigation issues'), on the one hand, and Question 2 ('climate impact issues'), on the other.

[61] Tóth 1999:22.

[62] Tóth 1999:23.

[63] Tóth 1999:25.

[64] Tóth 1999:45f. The examination is partly carried out by analogy to a study on hazardous waste disposal in Austria (hence 'Local Experiences').

Box 5: The Schelling Argument

Some provocative arguments, most prominently by Thomas Schelling,[a] have been put forward claiming that the large sums of money to be spent by the North for emission mitigation 'may be a grossly inefficient investment to improve the welfare of the poor people of the world, across and between generations'.[b] At first sight, this line of argument may seem quite independent of the Southern NSD concern: the unfair distribution of climate impact burdens. A second look, however, reveals a close connection, for 'as Schelling and others promoting this utilitarian argument acknowledge, it rests on a number of [presuppositions, in particular that] climate change adaptation is possible without large social costs, for example, from catastrophic consequences'.[c]

If this were the case, then our 'Southern viewpoint' would presumably cease to exist: There would be no reason for anyone to be concerned about an inequitable distribution of climate impacts if they were insignificant or even non-existent. But since we are quite certain that there are going to be large social costs, the Southern concern remains valid while Schelling's argument most likely is not and should be treated with the appropriate caution (even invalid arguments are not immune to misuse).

[a] Schelling T.C., 'The Cost of Combating Global Warming' *Foreign Affairs*, November/ December 1997. [b] Tóth 1999:48. [c] Tóth 1999:47f.

is not part of Shue's list,[65] (but still raises an important issue, see Box 5), the second one is obviously the same as Shue's fourth question, which links the author with the Northern side of the Divide.

Fairness in Economics

Of the three contributions by the guild of economists, two are straightforwardly concerned with the alleged Northern equity issues of allocating emission targets and distributing the burden of emission mitigation. The third one – Richard Tol, Samuel Fankhauser, and David Pearce's chapter on 'Empirical and Ethical Arguments in Climate Change Impact Valuation' – is a different matter altogether. While not directly concerned with the Southern issue of disproportionate impact burdens, the problem addressed is at the very core of that issue, for it is difficult to see how a disproportion could be given in the absence of some impact burden measure. The particular equity issue dealt with by Tol and his colleagues is, in a sense endogenous, for it only arises within the monetising methodology that traditional economics has adopted to measure these burdens. But as this methodology is likely to remain a significant component in impact assessments, it is important that such *sui generis* fairness problems be also addressed.

Fairness in Social Science

The section on fairness in social science begins with a perspective from social judgement research in psychology by Volker Linneweber. It focusses on an account of general psychological biases[66] in the context of allocating emission mitigation obligations which are indeed instructive in attempting to understand the actual

[65] At least not as a question, for it is of course reflected in his questions through his implicit assumption that all climate change which is avoidable must be avoided.

[66] '[S]elf-deceiving "positive illusions" make dealing with undesired information possible. ... [Being faced with an extremely threatening perspective] creates a motive to ignore critical developments. A less problematic perspective is achieved by: denying that threatening developments have actually occurred or will actually occur; doubting their effective danger by assuming, for example, that planetary ecosystems (or future users) are able to counter apparently threatening developments (regenerative or compensatory ability), and that human users have the power, or will develop it, to cope with threatening developments.'[Tóth 1999:120]

positions that countries have adopted. Nonetheless, the climate change issue addressed places the author firmly on the North-side of the Great Divide.

The second social science contribution, Shuzo Nishioka's 'Fairness and Local Environmental Concerns in Climate Policy' does give some emphasis to climate impacts in the developing world, in particular on 'local inhabitants,' a term used to refer to people with 'traditional wisdom' advocating 'harmonious coexistence with nature'. Even though it is debatable whether a return to such a Rousseauesque life-style would help developing countries in coping with climate change impacts, Nishioka's breaking of the conjectured 'Northern mould' has to be highlighted.

The one piece of the collection that manages to outdo this is, maybe not surprisingly, its only Southern contribution: 'Justice, Equity and Efficiency in Climate Change: A Developing Country Perspective' by P.R. Shukla, – an energy economist from the Indian Institute of Management (Ahmedabad) – who does highlight the distribution of climate change impact burdens and the associated causal responsibilities as a key equity issue: [67]

> The causal relationship of emissions with impacts is central to the climate change issue. The climate change burden includes the cost of emissions mitigation, adaptations, impacts and risks. The asymmetry between emissions and impacts highlights the equity concerns in the climate change problem, since a greater burden of impacts is distributed to poorer nations by natural processes, while most anthropogenic greenhouse gas emissions arise from economic activities in affluent nations. Since the impacts are inadequately understood, the higher risks are imposed on poorer nations. The valuation of impacts also poses serious difficulties...[68]
>
> ...emissions mitigation cost is just one component of the climate change burden. The others are costs of impacts, which are distributed across nations by climatic processes, and costs of adaptation. The aim of climate negotiations is to minimize the welfare losses and not the emissions or mitigation costs alone. Minimizing the welfare losses requires dealing up front with equity – that is, the distribution of total welfare burden, including the distribution of side payments.[69]

Perspectives from Law and Political Science

In his 'Justice in the Greenhouse: Perspectives from International Law', Frank Biermann aims to 'derive general principles of justice from regularities in positive international environmental law that are considered to be just by the majority of governments,'[70] and he concludes that 'although the empirical evidence is still limited to a few cases, its consistency could lead to the conclusion that these provisions indicate the increasing acceptance of a general principle of differentiation; in other words, in global environmental regimes the different responsibilities and different capabilities of nations must be taken into account.'[71]

Concerning the differentiation of responsibilities, Biermann takes a view which directly impinges on the Southern equity concern, for he believes that 'the Climate Convention itself cannot be applied to past activities, and, having permitted citizens to

[67] What may be slightly more puzzling is why his 'developing country perspective' was categorised as a sociological contribution, particularly in light of the paradigmatically economic 'Equity and Efficiency' issues being advertised in the title of his contribution. One could be forgiven in thinking that since 'A Developing Country Perspective' – unlike, say 'An Economic Perspective' (Chapter 5) – hardly fits the chosen disciplinary categorisation, 'Social Sciences' was used simply because of its perceived 'catch-all' character.
[68] Tóth 1999:146.
[69] Tóth 1999:147.
[70] Tóth 1999:160.
[71] Tóth 1999:165.

Differentiation More capable states must accept stricter regulations	**Solidarity** More capable states compensate the full agreed incremental costs of the environmental policies of less capable states
Restriction upon Sovereignty All states must accept environmental norms, as long as those have been consented to by all parts of the international community, and the other principles have not been violated (basis, e.g. for trade restrictions)	**Participation in Decisions** Less capable and more capable states must have equal powers in the decision-making process.

Figure 3: 'Common Concern of Humankind'

burn fossil fuels in past decades will hardly provide evidence for international wrongful acts by industrialized countries.'[72] His final selection of legal principles – graphically represented as a 'norm square of the emerging legal concept of common concerns of humankind'[73] (Figure 3) – thus fails to include 'responsibility' as a relevant term.[74]

The second 'perspective from law' – Juliane Kokott's 'Equity in International Law' – intends to clarify 'the legal principles or framework laid down in general public international law as well as in the convention itself, which could serve as guidelines in further concretizing the states' duties in the field of climate protection'.[75] In doing so, she provides a very valuable description of the legal concept of 'equity' tracing its origin back to Aristotle, who used the term as a corrective to prevent injustice through a strict application of general laws. 'Equity', in this sense, is thus intimately tied to systems of positive law.[76] Given this, it will not be surprising that when the author proceeds to discuss the 'Lessons for Climate Change' – perceived, in keeping with the Northern perspective, to be exclusively about allocating emission reduction quotas – historic responsibilities are again rejected on grounds that in the past, emitting was not considered to be a legally wrongful act[77] (an act of 'polluting').[78]

[72] Biermann's rejection of past responsibility, however, is based on a rather narrow legal conception of responsibility as enshrined in a general concept of international law that 'every international wrongful act of a state entails the international responsibility of that state'[Tóth 1999:165]. 'Responsibility,' however, can be given a perfectly good causal sense without recourse to legal guilt ('wrongful'). And since the principle of differentiated responsibility is *itself* enshrined in the Convention, there is no need to derive it from other principles involving such a narrow legal conception of 'responsibility'.

[73] Tóth 1999:169.

[74] Developing country impact burdens would still be covered by the 'Solidarity Principle', but with a crucial difference: solidarity is benevolence (charity), responsibility is duty.

[75] Tóth 1999:173.

[76] 'Recourse to concepts such as equity, fairness, justice or natural law becomes necessary in the absence of clear and precise rules of the positive law.'[Tóth 1999:173]

[77] 'It would be difficult to retroactively impose obligations deriving from the new concept of climate change as a common concern of states. ... Greenhouse gas emissions, however, were not considered as transboundary pollution contrary to international law in the past. Consequently, states would not agree to undergo disadvantages based on those past emissions. It would be unfair and unequitable to take past emissions as a main criterion for the determination of greenhouse gas reduction obligations'[Tóth 1999:187]

The final contribution – David Victor's neo-realist dissenting voice on fairness having got any role at all in international relations – again remains squarely within the Northern perspective with his apparent view that the only issue worth discussing in the context of climate change equity is that of allocating emission reduction targets.

While indicative, the eleven pieces collected in Tóth's anthology are clearly not a sufficient basis to actually infer anything about the equity views of the Northern policy research community as a whole. To draw any general conclusions, a much larger sample of the considerable body of existing literature on the subject would have to be taken into account. However, the only way in which this can be done here is by way of some existing digest. The recent publication of a comprehensive, literature-based assessment of all matters to do with climate change – the IPCC's *Third Assessment Report* (TAR) – is thus particularly fortuitous for the present purposes.

3.2 Equity in the IPCC Third Assessment Report

Like its two predecessors, the 2001 *Third Assessment Report* of the Intergovernmental Panel on Climate Change represents the most comprehensive interdisciplinary assessment of the contemporary state of knowledge on climate change and its implications. The Report is divided into three volumes corresponding to the IPCC's three Working Groups: a volume on climate science, and two on the socio-economic impacts of climate change (one dealing with emission mitigation, the other with climate change impacts and the associated issues of adaptation and vulnerability).

The index of the *TAR Mitigation*[79] volume lists 35 entries for 'Equity,' covering 71 of the total 752 pages, 23 of which list it as the main topic. Given the variety of issues involved in emission mitigation, this is not a bad showing for the issue of equity in emission mitigation, and it reflects the numerous pieces written in the past years on the subject in its multiple facets, be they 'procedural' and 'consequential', or 'intra-generational' and 'inter-generational' (more on these distinctions in Part III of this study).

In short, equity does seem to have been taken onboard by the expert community involved in mitigation policy research. But is it, as suggested by the Great Divide-conjecture, part of a 'Northern agenda'? A look at the relevant citations[80] reveals that roughly a third (70 out of 205) refer to pieces with lead experts domiciled in developing countries. It also reveals that both the 'top-scoring' experts and papers hail from the Southern hemisphere (Table 3).

However, one has to be cautious in drawing inferences from this sort of citation-based 'proxy-data'. Authors' preferences, for one, can lead to a citation choice which may compromise the reliability of such a method.[81] A simple way of circumventing at least

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[78] As with Biermann, this argument fails to take into account that causal responsibilities can occur in the absence of any legal system at all. However, it does show that if one wishes to use historic causal responsibility arguments, then one had better refrain from the use of the term 'pollution' (e.g. as in 'polluter pays principle'), and instead use language reflecting the purely causal nature of the responsibility in question (e.g. 'causal responsibility principle,' or the much more appropriate German expression 'Verursacherprinzip' i.e. the 'principle of (who or what is) the cause').

[79] *Climate Change 2001: Mitigation*, Bert Metz, Ogunlade Davidson, Rob Swart, and Jiahua Pan (eds), Cambridge: CUP for IPCC, 2001.

[80] The range of pages considered is those indexed as having 'Equity' as their main theme: 84–97, 329, 482–3, 668–73.

[81] For example, it could be that the apparent correlation between high citation scores and participation at the 1999 Sri Lanka IPCC Expert Meeting on Development, Equity and Sustainability, is (among

Table 3: TAR *Mitigation*.[1] 'Equity' Citation Rankings.[2]

(B) *Most Cited Lead Experts*[3]

J.K. Parikh* (16), A. Agarwal (14), S. Rayner* (12), M. Munasinghe* (9), A. Najam* (7), T. Banuri* (5), D. Jamieson (5), H. Shue (5).

(B) *Most Cited Papers*

# of ref.	Title
5	Agarwal, A., S. Narain, and A. Sharma (eds), 1999: *Global Environmental Negotiations I.* CSE, New Delhi.
5	Munasinghe,* M., 2000: 'Development, Equity and Sustainability in the Context of Climate Change'. In M. Munasinghe, R. Swart (eds) *Proceedings of the IPCC Expert Meeting on Development, Equity and Sustainability*, IPCC and WMO 2000.
5	Rayner,* S., E. Malone, and M. Thompson, 1999: 'Equity Issues in Integrated Assessment. In F. Toth (ed.) *Fair Weather? Equity Concerns in Climate Change* London: Earthscan.
4	Parikh*, J.K., K.S. Parikh*, S Gokarn, J.P. Bainuly, B. Saha, and V. Shukla, 1991: *Consumption Patterns: The driving force of environmental stress.* UNCED Report.
4	Rayner,* S., and E. Malone, 2000: 'Climate Change, Poverty, and Intra-Generational Equity at the National Level'. In M. Munasinghe, R. Swart (eds) *Proceedings of the IPCC Expert Meeting on Development, Equity and Sustainability*, IPCC and WMO 2000.
4	Shue, H., 1993, 'Subsistence Emissions and Luxury Emissions' *Law and Policy* 15 (1)

[1] *Climate Change 2001: Mitigation*, Bert Metz, Ogunlade Davidson, Rob Swart, and Jiahua Pan (eds), Cambridge: CUP for IPCC, 2001.
[2] The range of pages considered is those indexed as having 'Equity' as their main theme: 84–97, 329, 482–3, 668–73. Underlining indicating throughout presence, or being presented, at the the IPCC Expert Meeting on Development, Equity and Sustainability, Colombo, Sri Lanka, 1999. * = *TAR Mitigation* Author
[3] 'Lead Expert' = lead author or lead editor. Italics indicating home institutions in a developing country

some of these problems is to switch from the citations to the cited papers or (lead-) experts as the object of regional categorisation. In this case, the developing country share drops to 27 and 20 percent, respectively[82] – the latter being only marginally larger than the 19 percent developing country share in the total number of experts listed in TAR-*Mitigation* (as authors or reviewers). Moreover, the share of mitigation experts working on equity appears to be pretty much the same in both hemispheres (21 percent in the North, 22 in the South).

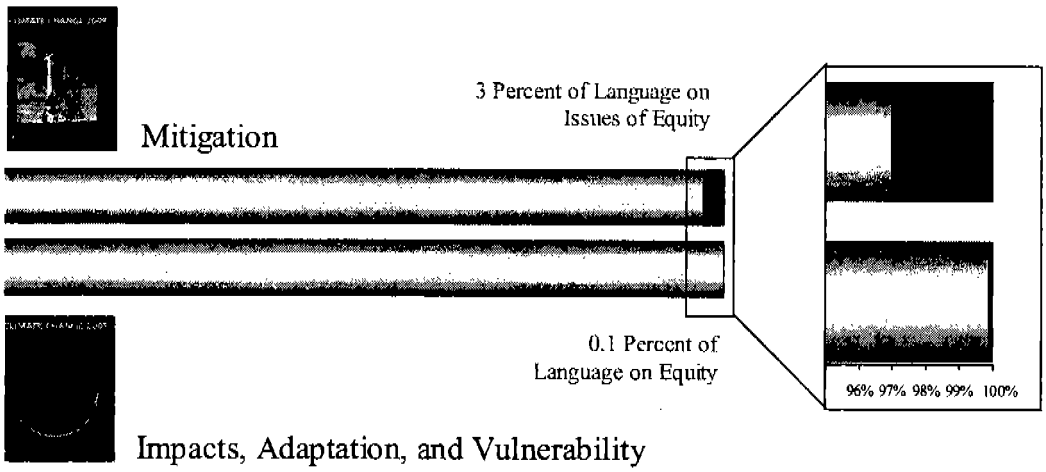
These demographic figures thus point towards a considerable and fairly uniform research interest in mitigation equity issues across both hemispheres. The relative strength of the Southern perspective in the citation record thus becomes all the more remarkable (given the overwhelming numerical superiority of the Northern research community). Again, there are likely to be many diverse explanatory factors. The most important one for the present purposes – an elucidation of the 'Northern perspective' – might be the research community's perception of (mitigation-) equity as a pre-eminent 'Southern concern'. This perception is not necessarily wrong.[83] What would

other things) a reflection of the 191 *TAR-Mitigation* authors having taken note of this meeting. This, however, could either improve or hamper the method's effectiveness, depending on how accurately the participants represent the research community at large.

[82] Papers: 43, out of 157. Experts: 22, out of 114.

[83] There can be no doubt that the Southern 'top-scorers' (Table 3) have been among the most forceful champions of equity in the mitigation debate, and it is questionable whether the issue would have achieved its prominence without their and their Southern colleagues' advocacy.

Figure 4: Equity in the Third Assessment Report



be wrong is to infer that these mitigation related issues – in particular the allocation of future emission targets – are *the* single most pressing Southern equity concerns.

One way of approaching the question whether such an invalid inference has actually been implicit in the thinking of climate equity research practitioners is to consider the fate of the most likely alternative, namely equity in the context of the issues discussed in the TAR volume on *Impacts, Adaptation, and Vulnerability* ('*TAR Impacts*').[84] A cursory look (at the index) reveals an 'equity situation' rather less rosy than in the *Mitigation* case, to put it mildly (Fig. 4). Of the 1032 pages, merely 8 are referred to under the index entry 'Equity', none of them as the main theme. More precisely, equity considerations, totalling about 1.5 pages of text in three chapters (see Table 4), are covering two distinct topics: 'Insurance and Equity', and 'Adaptation and Equity.'

Chapter 18 – advertised as 'Adaptation to Climate Change in the Context of Sustainable Development and Equity' – deals with the issue of equity in a half-page sub-sub-sub-section (*18.5.2.6 Equity*) concerned with the impact of differentiated wealth distributions on adaptive capacities.[85] Apparently the only place where anything close to the Southern impact responsibility concern is referred to in TAR *Impacts* (and thus probably in the whole of the *Third Assessment Report*) is the following paragraph related to the insurance sector:

> In developing nations, the availability of insurance and financing has considerably lower penetration than in wealthy nations. At the global scale, one form of inequity arises in which a greater share of the costs of extreme weather events are borne by governments and

[84] *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, James McCarthy, Osvaldo Canziani, Neil Leary, David Dokken, and Kasey White (eds), Cambridge: CUP for IPCC, 2001.

[85] Even if one does not insist that themes with equal billing should always be given equal prominence in treatment, the proportion allocated to equity in this 35 page chapter does seem to put the chapter heading dangerously close to the reach of the Advertising Standards Authority. Having pointed this out to Saleemul Huq (Bangladesh), one of the chapters' 15 authors – incidentally, apart from Brian Challenger (Antiugua), the only one representing a developing country – he replied that this was 'not because we didn't feel it [equity] was important but (as you are aware) IPCC can merely report the peer reviewed scientific literature and we had to look for papers which covered all three of the following issues to be eligible: 1.Equity, 2.Climate change and 3.Adaptation. As you are aware there is hardly anything that fits that combination (yet).'[S. Huq, personal communication, 14 December 2001].

> consumers in the "south" than in the "north." Rising uncertainties could reduce the availability of insurance in some areas and impede the expansion of adaptive capacity offered by insurance markets in developing countries. Governments' ability to compensate by providing more insurance and disaster relief would be similarly strained.[86]

The picture of impact equity research emerging from the TAR is a bleak one, to say the least. Obviously, some caution has to be exercised in drawing conclusions from this fact. Pieces, such as Jyoti Parikh's excellent 'Inequity, a Root Cause of Climate Change,'[87] may have been excluded from consideration because of the IPCC's restriction to conventionally published material. And yet, the complete dearth of (conventional) literature citations on the topic in TAR *Impacts* makes it difficult to believe that there has been a significant interest in the (Northern) research community in these impact related equity issues.

Table 4: *TAR Impacts, Adaptation and Vulnerability*. List of 'Equity' Citations

8. Insurance and other Financial Services
Box 8-2. Equity Issues that are relevant for the Insurance and other Financial Service Sectors: p.438

Hooke 2000	US participation in international decade for natural disaster reduction
Kreimer and Arnold 2000	The World Bank's role in reducing impacts of natural disasters
Miller et al 2000	What's Fair? Consumers and Climate Change
Solis et al 1997	Guidelines on Cultural Diversity and Disaster Management

15. North America
Section 15.2.7.4. Equity and Sustainability Issues in Relation to Insurance: p.775

Hamilton 2000	Science and technology for natural disaster reduction
Hooke 2000	US participation in international decade for natural disaster reduction
Kunreuther and Roth 1998	Paying the Price: The Status and Role of Insurance Against Natural Disasters in the US
Mileti 1997	Managing hazards into the next century
Miller et al 2000	What's Fair? Consumers and Climate Change
Mills and Knoepfel 1997	Energy-efficiency options for insurance loss prevention
Nutter 1996	Insurance and natural sciences: partners in the public interest
Scott and Coustalin 1995	The evolution of water rights
Solis et al 1997	Guidelines on Cultural Diversity and Disaster Management
Vine et al	Tapping into energy

18. Adaptation to Climate Change in the Context of Sustainable Development and Equity
Section 18.5.2.6. Equity: p.897

Adger 1999	Exploring income inequality in rural, coastal Vietnam
Adger and Kelley 1999	Social vulnerability to climate change and the architecture of entitlements
Bohle et al 1994	Climate change and social vulnerability: toward a sociology and geography of food insecurity
Bolin and Stanford 1991	Shelter, housing and recovery: a comparison of US disasters
Burton et al. 1998	Adaptation to climate change: theory and assessment
Chan and Parker 1996	Response to dynamic flood hazards factors in peninsular Malaysia
Cynert and Kumar 1996	Strategies for technological innovation with learning and adaptation costs
Handmer et al 1999	Societal vulnerability to climate change and variability
Kelly and Adger 1999	Assessing Vulnerability to Climate Change and Facilitating Adaptation
Mustafa 1998	Structural causes of vulnerability to flood hazards in Pakistan
Rayner and Malone 1999	Climate Change, Poverty and intragenerational equity at the national level
Ribot et al 1996	Climate variation, vulnerability and sustainable development in the semi-arid tropics
Scheraga and Grambsch 1998	Risks, opportunities and adaptation to climate change
Toth 1999	Development, equity and sustainability concerns in climate change decisions
Uitto 1998	The geography of disaster vulnerability in megacities
Wisner 1998	Marginality and vulnerability: why the homeless in Tokyo don't count in disaster preparations

[86] McCarthy *et al.* 2001: 438.
[87] *IHDP Update*, Newsletter of the International Human Dimensions Programme on Global Environmental Change, Number 3/00, 2000.
http://www.uni-bonn.de/ihdp/ IHDPUpdate0003/viewpoint.htm

It thus stands to reason that – having set the overall agenda to be emission mitigation – the Northern stakeholders misread the advocacy for 'equity' by the Southern participants in this debate as implying it to be *the* Southern equity concern. Realising the strength and importance of the Southern view in this respect, this misreading then led directly to the Northern perception that issues such as allocating emission targets are the most pressing equity concerns of all.

3.3 Conjectures and Conclusions

The picture emerging from this literature assessment is that the Northern research community – due to a misreading of concerns expressed by their Southern colleagues – has come to view mitigation related issues, in particular the allocation of emission targets, as the most pressing equity concerns in the climate change context. It is, of course, not totally inconceivable that policy research could fail to appreciate sufficiently a key problem in the policy process. Yet the apparent almost complete failure to listen and take note of the concerns voiced at the policy *decision* level in the climate change equity field is extraordinary.

To be fair, the academic community is not alone in this apparent failure to 'check realities'. The predominantly Northern NGOs represented at Marrakech, at least, seemed to be suffering from the same impediment. Friends of the Earth International very laudably hosted a COP7 Special Event on '*The Equity Agenda*' (Box 6). There is no doubt that it was right to put this agenda to the parties at Marrakech, yet one cannot help but wonder what policy makers from the most vulnerable countries would have made of the fact that – bar a few remarks by the only Southern panellist – the event was purely about distributing emission targets.

At the end of the Marrakech conference, the NGO community put together their own alternative to the official Marrakech Declaration. Its preamble – citing TAR – does acknowledge 'devastating impacts', indeed it even implicitly refers to the responsibility problem: 'Africa ... one of the areas most impacted by Northern-induced climate change'. The four remaining bullet points, however, are firmly in line with an 'environmental agenda', two focussing on energy issues and two on the need for further mitigation and the (equity related) discrepancy in per capita emissions.

Given this, it will not be surprising that four out of the five demands of 'The Real Marrakech Declaration' are equally firmly rooted in the energy/emission discourse, the only exception being the demand for the provision of 'the financial resources needed to enable developing countries to cope with the adverse impacts of climate change and develop the necessary institutions to ensure that sustainable development goals are met'. In short, the NGO alternative Marrakech Declaration is firmly rooted within the mitigation/energy paradigm, actually putting it in contrast to the ministerial counterpart which was almost exclusively about climate change impacts.[88]

Before we turn to sum up the results of these diagnostic efforts, it may be useful to spend a thought or two on how it could be that policy analysts seemed to have overlooked one of the main issues of the debate. It seems this phenomenon is at least

[88] Not to be all too unfair to Northern NGOs, 'substantial parts of the content including the energy points came from Southern NGOs'.[Bill Hare, personal communication, 6 February 2002] Furthermore, since the writing of this, there have been several occasions – most notably an 'Equity Summit' by the Climate Action Network in May 2002 – where the issue of human impacts seems to have shifted much more to the centre of attention.

Box 6: NGOs at Marrakech

'The Equity Agenda'. Friends of the Earth International COP7 Special Event. 7 November 2001

- Ben Matthews, Choose Climate, demonstrated a series of interactive climate modeling graphs which enable users to .... explore equity and distribution issues.
- Tuuli Lehtinen and Jenni Kauppila, Friends of the Earth (FOE) Finland, introduced a report entitled "The Whole Climate: Climate Equity and its Implications for the North." The report examines three proposals that attempt to factor equity into emissions allocations: ...
- Douglas Korsah-Brown, FOE Ghana, noted that, because the UNFCCC lacks a definite emissions cap, countries will continue to consume and will leave no environmental space for countries that are still developing. He stressed the need for an emissions cap to allow these countries to increase their emissions, and for capacity building and technology transfer to enable developing countries to raise their consumption and living standards to basic levels.
- Paul Baer, Eco Equity, explained that Eco Equity was founded to educate American citizens about the equity issues surrounding the global climate debate and the ethical and human rights imperatives for allocating emissions on a per capita basis.

Source: ENB On the Side, 5 November 2001, http://www.iisd.ca/linkages/climate/cop7/enbots/nov5.html

'The Real Marrakech Declaration'

WE, CITIZENS OF THE WORLD, meeting in Marrakech, Africa, in one of the areas most impacted by Northern-induced climate change:

- ACKNOWLEDGING the evidence from IPCC's Third Assessment Report that climate change is real and is already causing devastating impacts on humans and the environment, such as droughts in the Maghreb region, ... will aggravate global inequalities and pose a grave threat to sustainable development;
- RECOGNISING that access to clean and reliable supplies of energy is desperately needed to meet even the most basic daily needs of the world's poorest people, ...;
- UNDERSTANDING that renewable energy, combined with energy efficiency and sustainable consumption patterns, is essential to prevent dangerous climate change ...;
- DEEPLY CONCERNED by the disparity in per capita emissions between developed and developing countries – average US per capita emissions are 10 times higher than China's, and 100 times higher than Tanzania's – and similarly huge disparities in per capita incomes;
- RECOGNISING, therefore, that immediate, sustained and progressively deeper mitigation is necessary for adaptation to be possible.

CALL ON OUR GOVERNMENTS TO:

- RATIFY the Kyoto Protocol ...;
- PROVIDE the financial resources needed to enable developing countries to cope with the adverse impacts of climate change and develop the necessary institutions to ensure that sustainable development goals are met;
- ENSURE sufficient funding, technology sharing and capacity building so that energy services are available and affordable to the two billion people in developing countries, ...;
- EXPAND renewable energy worldwide so that these resources provide about 50 per cent of total energy supply by 2050, and greater levels thereafter. ...;
- QUICKLY ESTABLISH emissions reduction targets for industrialised countries from 2012 onwards. Developed countries must move onto a trajectory of greenhouse emissions reductions that would lead to a cut of 80 per cent by 2050. ....

Source:'The Real Marrakech Declaration,' *Eco*, Volume CVII, Issue No 11, 9 Nov. 2001, pp.1f. http://www.climatenetwork.org/eco/

partially explicable through fundamental differences in the perception of the climate change issue as a whole, differences alluded to, for example, at COP7 by Mario Rietti of the Honduran Delegation in his remark to the *Buenos Aires Herald* that 'the whole point of the Rio Earth Summit was Agenda 21, which is basically charting the path for sustainable development. Unbelievably, there are people here who do not even know what Agenda 21 is. They are looking at climate change from an environmental and financial perspective, forgetting the broader socio-economic implications.'[89]

Among the many possible views on what the climate change problem is about, two – say, for the sake of a name, that of an 'Environmentalist,' and that of a 'Humanist' – are of particular importance in this context:

- An *Environmentalist*, in this sense, views climate change primarily as an environmental, indeed ecological problem. It is a problem of polluting the environment, of degrading the eco-system. As such its essence is seen to be that of a wrongful act against 'Nature' – itself conceived as independent of anthropocentric concerns, (e.g. in terms of bio-diversity), as a public good ('the sort of thing one enjoys on weekend and vacation outings'), or as a private good (agricultural assets). Accordingly, environmental effectiveness – the capacity to 'make good' the human-inflicted harm on Nature – becomes a key criterion in an Environmentalist's assessment of climate change measures. The chief victim from a Environmentalist's perspective is Nature, man's role is primarily that of culprit. And while climate impacts on human welfare are regarded as potentially life-style-threatening, they are taken to be self-inflicted and hence 'deserved.' Environmental integrity ('to do justice to Nature'), for an Environmentalist, is the overriding moral objective. Issues of distributive justice are only of concern insofar as they could become obstacles in the pursuit of this paramount objective.[90]
- For '*Humanists*', climate change has primarily come to be seen as a human welfare problem – not least because of the assessment work carried out by the IPCC. The harm is against humans, it is largely other-inflicted, and it is not life-*style*-, but *life*-threatening. In short, the chief victim of climate change is not 'Nature', but people and the paramount inequity is one between human victims and human culprits.

It would obviously be wrong to think that everyone in the industrialised world is an 'Environmentalist', and everyone in the developing one a 'Humanist,' in this sense. Yet it stands to reason[91] that the 'hemispheric' perceptions of climate change have been significantly influenced by these two positions. If generally recognised, this could prove to be of considerable practical value, as it might help to remove and prevent certain fundamental misconceptions between the two 'camps,' such as the not infrequent Northern view that developing countries have only become more interested in climate change over the years because they realised that they can hold the industrialised world to ransom with their projected emissions.

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[89] Carmen Pignotti (*Buenos Aires Herald*),'Marrakech bickerings cloud Johannesburg prospects' in *Reports on the World Climate Summit*, www.dse.de/iij/cop7news.htm

[90] An equitable allocating of emission targets is primarily considered to be a problem because it is seen to be a *sine qua non* for an expansion of the mitigation regime to developing countries. Allocations which would result in surplus permits are rejected because they are perceived to be conflicting with the paramount objective of environmental integrity

[91] On grounds of an 'inference to the best explanation,' a well-known philosophical method of choosing between rival theories according to their ability to explain the phenomena.

4. Summary Diagnosis

The review of COP7 media reports and ministerial statements has provided significant positive evidence that (i) the most pressing inequity issue for developing country stakeholders is having to bear climate impact burdens disproportionate with causal responsibilities, and (ii) their view that this issue has hitherto largely been ignored. A subsequent look at recent academic climate equity literature lent support to this view. Indeed it indicated that while 'equity' is often being put on the agenda by developing country experts, the scope of the agenda itself – namely emission mitigation – was firmly set by the industrialised world.

The analysis suggests a realisation among the industrialised country policy analysis community that – in order to further engage developing countries in the climate change regime – it is necessary to address their equity concerns. But this realisation seems to be firmly grounded in the preconception that the 'regime' in question has to be a mitigation regime such as the one governed by the Kyoto Protocol. Thus while there are numerous publications on equity issues related to mitigation, (in particular the issue of allocating emission targets to developing countries – perceived to be their main equity concern), no discernible research effort – judging from the recent IPCC *Third Assessment Report* – has gone into addressing what this study suggests to be their real concern: unfair climate impact burdens.

In short, the evidence considered gives strong support to the initial conjecture of a Great Divide in the perception of what constitutes the paramount climate change equity problem. In the Northern hemisphere, where the discussion is primarily led by non-government stakeholders (academic, NGO), it is regarded as the issue of allocating emission mitigation targets; in the South, the concern – backed by many governments – is above all about the discrepancy between the responsibility for, and the sharing of climate impact burdens.

What lessons for the future development of the multilateral climate change regime can be drawn from this? While lessons are bound to differ between the stakeholders involved – governments, non-governmental and intergovernmental organisations (NGOs, IGOs), academic institutions – the one overarching lesson must be to take heed of the programmatic demand made by India at the COP7 high-level segment (particularly if one believes the scope of the current regime to be too narrow):

> The efforts so far have been focussed on mitigation. In the coming decades, adaptation needs to be given much greater attention. The next decade, Mr. President, therefore should see concrete implementation of existing mitigation commitments and active consideration and action on adaptation to the adverse impacts of climate change.[92]

At the *policy decision* level – the level of national governments – the inevitable impacts and their differentiated causal responsibilities must be fully acknowledged and taken into account in the multilateral negotiations under the Framework Convention (FCCC). In other words, while the mitigation regime established under the Kyoto Protocol will inevitably require some negotiation about architectural extensions (e.g. second commitment period targets), the issue of sharing climate

[92] *Op. cit.* Section 2.2.

impact burdens must be given centre stage, in particular because of the fact that while mitigation burdens are still a matter of decision, many of the impact burdens are not.[93]

To enable this change of negotiating focus, the immediate lesson at the level of *policy analysis* must be to put much greater effort into thinking of innovative ways in which these impact burdens could be distributed. The fact is that – apart from the controversial monetisations of economic cost-benefit analysis (themselves fraught with intrinsic equity problems) – we seem to have little if any idea how such burdens, say that of the 25 million refugees expected by Bangladesh alone, could actually be shared, let alone be shared in an equitable manner.

The specific lesson to be drawn by the policy analysis community of the industrialised world – particularly those of us interested in issues of distributive justice – must be to overcome our mitigation myopia. We must take note of the parties' *actual* concerns instead of focusing on projected preconceptions. Again, this is not to say that 'second commitment period' work ought to be abandoned, but merely that it has to be counter-balanced, even outweighed, by research on the impact burden sharing problem.

To sum up, the main lesson for anyone believing that developing countries are essential for the success of a climate change regime must be to listen and take note of their real concerns. This may be difficult, but without it, there is unlikely to be an effective global response to the climate change challenge.

[93] There seems to be some acknowledgment of this even among Northern Parties, as witnessed in a COP7 interview of the UK Secretary of State Margaret Beckett: 'the more we can get this (the Marrakesh talks) out the way, the more it gives us an opportunity at the summit in Johannesburg to focus on the bigger picture which is the link between dire poverty and environmental degradation, the tremendous difference that access to clean water to sustainable supplies of energy can make right across the world, and the contribution that can make not only to greater prosperity but also to a different attitude to peace.' [BBC News 1 November 2001, http://news.bbc.co.uk/]

Part II
BRIDGING THE DIVIDE: REDRESSING THE BALANCE

The second Part of this study takes up the challenge to policy analysts issued at the end of the first 'diagnostic' Part, namely to try to find remedies for the diagnosed problem of sharing climate impact burdens in their multifarious guises. Because of this diversity it is unlikely for there to be a single unified solution to this impact burden sharing problem – other than the monetizing Gordian-knot-solution of traditional economic cost/benefit analysis, briefly discussed and largely rejected in the first section of Chapter 5 on 'Conceptual Preliminaries'.

Given limited resources, a setting of priorities becomes inevitable. Section 5.2 then considers some of the taxonomies – for example, geographical, pathological, or hazard-type categorisations – which could be used in such a prioritisation. It suggests that, in light of the current state of the multilateral climate change regime established under the Framework Convention on Climate Change, the most useful classification may be a variation of the 'management continuum' used in the field of disaster management, based on the key distinction between 'disaster reduction' and 'disaster response'. The section concludes, in particular, that of all the different impact burden related activities, the ones which have been most neglected in the international climate change regime are those dealing with response measures, i.e. measures designed to provide relief, rehabilitation and recovery of impacts which may happen in spite of all the preventative activities.

Neglect – past or present – on its own, however, is not sufficient to give priority to anything. This is why Chapter 6 ('International Disaster Relief: The "Demand-side Picture"') proceeds to argue that impact response activities in general, and disaster relief measures in particular, require immediate attention. The argument is based on recent short to medium-term climate predictions and on historical data concerning the impact of hydro-meteorological ('weather-related') disasters during the last three decades. Attention is given to the regional distribution of these disasters and the related issues of distributive justice.

Chapter 7 complements this 'demand-side' picture for disaster response (relief) measures with a sketch of the current 'supply side', i.e. the current institutional structure for international disaster relief and the donor statistics for weather-related disaster relief for the least ten years.

The study ends in Chapter 8 with a description of a concrete example of how to improve climate impact management and burden sharing in the context of disaster relief through a simple adjustment of the currently prevailing relief finance mechanism.

5. Conceptual Preliminaries

5.1 Monetisation: Economics' Panacea

As mentioned on several previous occasions, the burdens imposed on people and societies by climate (change) related impacts come in a variety of largely incommensurable shapes and forms such as (an increase in)

- drought-induced famines in the Sahel zone,
- displacement of people by tropical storms and floods in Bangladesh,
- hurricane damage to property in Florida,
- vector-borne diseases (malaria etc.) in the Mediterranean.

By far the best, if not only known strategy to unify this variety in a single parameter framework is that of 'monetisation,' an economic method based on a series of rather strong assumptions. In a first instance, it is assumed that societal burdens can be reduced to personal burdens, that burdens imposed on society can be fully characterised and captured by reference to burdens imposed on its individual members. Individual burdens, in turn, are analogously taken to be reducible to a particular type of psychological state – (un-) happiness, (dis-) utility – themselves involved in the making of the individual's consumer choices.[94]

This 'utilitarian turn' with its general commodification of individual as well as social (impact) burdens may be the only way in which these burdens can in their totality be brought under the remit of economic theory, but it raises some serious questions. Objections to utilitarian social welfare conceptions are well-known, but the fundamental point at issue here is not how to aggregate individual utilities (or 'preferences,' for that matter) into a 'social welfare function', but whether the presupposed reduction of all these possible burdens to consumer preferences is really a legitimate move.

In other words, the key point is whether it is really legitimate to assume that monetary (side-) payments could *always* 'compensate' individuals for a burden imposed on them, – i.e. restore them to a state equivalent in some way to the one they were in before the imposition of the burden *without* actually lifting it – as it is presupposed to be by the standard economic valuation techniques based on estimates of individuals' Willingness To Accept compensation (WTA), or Willingness To Pay to have the burden lifted.[95]

To be fair, these valuations are often couched in risk-management terms which may be less problematic as regards the involvement of market preferences. Thus individuals will typically be asked how much money they would need to be given if, say, the risk of contracting malaria or mortality were to increase by 5 percent over the next year; or how much they would be willing to pay to avoid the burden of such risk increment.

Establishing a WTP to avoid a certain (incremental) risk does seem to be an innocuous enough practice, carried out time and again in the course of setting insurance premiums. Yet establishing the appropriate premium is obviously not the same as determining the appropriate payout. Thus if one is intent on valuing impact damages with these methods one cannot avoid asking about the impacts themselves as opposed to the risk of their occurrence. In other words, the question is not how much money would compensate one for, say, an increased risk of contracting malaria, but – assuming one had contracted malaria – how much additional income would be needed to return one to the level of contentment enjoyed prior to falling ill?[96] An answer, if possible at all, could then be used to determine a monetary value of the burden

[94] Economists of a more 'ordinal' persuasion may object to this last characterisation as an over-simplification of their position. However, the point to be made here equally applies to the ordinal framework with its assumption of all encompassing individual preference structures.

[95] For a summary description of these methods and their history see, for example, Benito Müller, 'Contingent Valuation and Environmental Compensation: American Experiences,' *The Journal of Energy Literature*, vol. 3 no 1 (1997):pp.3–28.

[96] Or, to put it in ordinal terms, how much would the income have to be increased from its present value for one to be indifferent between the present commodity bundle (without malaria) and the same bundle with malaria.

imposed on the individual by contracting malaria due to anthropogenic climate change (assuming some 'attribution' procedure).

Yet the key issue is precisely whether such an answer is possible at all. Had the question instead been about the death of a loved-one, then it would not be surprising to hear that no money could possibly compensate. Indeed, the impossibility of such monetary compensation becomes self-evident if one takes the mortality issue even closer to home by inquiring how much additional income would be required in the event of one's death to return one to the level of contentment enjoyed when one was still alive. It is difficult to see how this question could be anything but nonsense.

Mortality is by no means the only impact which may not be compensatable in this sense. Displacement, for example, is usually not just the loss of shelter, but the loss of one's 'home' and 'roots.' Such losses of social context can inflict psychological traumas which are unlikely to be compensatable in the manner in which the loss of a banana might be adequately compensated by the gain of two apples (or the receipt of 40 cents). Moreover, if the displacement is forced by anthropogenic causes, even the potential burden can justifiably engender moral indignation which is likely to make simple monetary compensation even less adequate, as is witnessed in the following statement:

> Those of us who live on small specks of land, ... in the Caribbean, have not agreed to be sacrificial lambs on the altar of success of industrial civilization. I frequently tell North American audiences that the love which I have for my island-country is not any lesser than the love which they have for their country, just because my country is much smaller. Our love of country is equal. Just as North Americans would not tolerate, not for an entire generation, any innocent act originating on my small island which jeopardized their security and their tomorrow, so I too am compelled to let them know that we will never cease to use the means available to us to persuade others that we find their 'innocent' actions collectively unacceptable.[97]

In short, there are certain (potential) impact burdens which do not lend themselves to be monetised by these sorts of methods. Others, such as damage to property, may well be within their scope, but since they are lumbered with quite a few other problems,[98] it seems advisable to face the diversities inherent in the impact burden sharing problem directly without confining it to the Procrustean bed of catch-all monetisations.

5.2 How to Treat Impacts: 'To Adapt' or 'To Manage'?

Taxonomies and Priorities. Faced with the inability to do everything at once, it is advisable to set priorities. In trying to find ways and means of sharing climate impact burdens (on people and societies), one might thus consider focussing on one or two sorts of impact burdens. But what sorts? One might, for example, countenance a geographical taxonomy. Yet while, say, South-Asian impact burdens do pose a more pressing problem in terms of people affected (see Chapter 6) than European and North American ones, narrowing down the scope of inquiry by way of such a geographical focus is unlikely to simplify the task at hand: the diversity of impact burdens in South

[97] 'The Moral Dimensions of Global Climate Change,' Statement by Ambassador Lionel Hurst of Antigua and Barbuda at The International Red Cross Conference on Climate Change and Natural Disasters, The Hague, 28 June 2002:pp.2-3.

[98] For example, it is not self-evident that a valuation in terms of these consumer-preference-centred methods would be able to capture macro-economic damages such as the potential loss of foreign direct investment due to political unrest arising, say, as a consequence of large-scale displacements of people due to climate impacts.

Box 7: The Concept of 'Adaptation' in Climate Change Discourse

***FCCC/TP/1997/3*:**

- Adaptation to climate is the process through which people reduce the adverse effects of climate on their health and well-being, and take advantage of the opportunities that their climatic environment provides (Burton, 1992)
- Adaptation involves adjustments to enhance the viability of social and economic activities and to reduce their vulnerability to climate, including its current variability and extreme events as well as longer-term climate change (Smit, 1993)
- The term adaptation means any adjustment, whether passive, reactive or anticipatory, that is proposed as a means for ameliorating the anticipated adverse consequences associated with climate change (Stakhiv, 1993)
- Adaptation to climate change includes all adjustments in behaviour or economic structure that reduce the vulnerability of society to changes in the climate system (Smith *et al.*)

Richard J.T. Klein and Richard S.J. Tol, (1997), 'Adaptation to Climate change: Options and Technologies', Technical Paper prepared by the FCCC Secretariat, Technical Issues: Adaptation Technologies, FCCC/TP/1997/3, 9 October 1998)

IPCC TAR-2 (p.982): Adjustment in natural or human systems in response to actual or expected climatic *stimuli* or their effects, which moderates harm or exploits beneficial opportunities.

Sub-Categories:

- *Anticipatory* (or *Proactive*) – Adaptation that takes place before impacts of climate change are observed.
- *Autonomous* (or *Spontaneous*) – Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems.
- *Planned* – Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.
- *Private* – Adaptation that is initiated and implemented by individuals, households or private companies. Private adaptation is usually in the actor's rational self-interest.
- *Public* – Adaptation that is initiated and implemented by governments at all levels. Public adaptation is usually directed at collective needs.
- *Reactive* – Adaptation that takes place after impacts of climate change have been observed.

Asia is not going to be markedly smaller than their global diversity. And the same would be true if one chose instead to opt for a hazard-type taxonomy, where impact burdens are differentiated by their natural hazard causes.

A more promising approach may be to look at the 'pathology' of impact burdens, i.e. differentiate them according to the medical types of human suffering involved (hunger, malaria, dehydration...). Clearly not all impact burdens are covered by this medical taxonomy, but those that are have been with us long before anthropogenic climate change, and the question of how they can be alleviated and shared has been thought about extensively, particularly in the field of disaster management. Indeed, the promise of this 'pathology approach' lies precisely in linking the task at hand – to find a taxonomy suitable for setting priorities in the search for ways of sharing impact burdens – with the existing extensive body of analytic work in the field of disaster management.

A cursory look at this material reveals that the basic taxonomy used by the practitioners and analysts in this field – the so-called 'disaster management continuum' – differs fundamentally from the above-mentioned classifications: it does not classify kinds of disasters (impacts), but types of activities aimed at managing them. The wealth of experience underpinning this conceptual choice gives reason to

suspect that a similar change of focus may be a useful direction to proceed for our own purposes. In other words, it might also be useful for us to take a step back from classifying impact burdens and to focus instead on the types of *activities* to deal with them.

The Adaptation Taxonomy. The tradition in the decade-old multilateral climate change regime has been to subsume activities related to climate impacts under the concept of 'adaptation.' Yet the UN Framework Convention on Climate Change (FCCC) – which provides the governing legal framework for this regime – itself fails to provide a definition of this term.[99] Various characterisations have been used in the debate (see Box 7), but the ones that have had the greatest acceptance are those proposed by the IPCC in their *Assessment Reports.* The most recent of them can be found in the Glossary of the *Impacts, Adaptation and Vulnerability* volume of the *Third Assessment Report* (IPCC TAR2, 2001):

> *Adaptation* Adjustment in natural or human systems in response to actual or expected climatic *stimuli* or their effects, which moderates harm or exploits beneficial opportunities.[100]

The IPCC glossary further distinguishes between certain types of adaptation such as *anticipatory* (or *proactive*) versus *reactive*, depending on whether the adaptation takes place before or after impacts of climate change are observed (see Box 7). The key feature of this taxonomy, however, is not so much its internal constitution as the fact that it has traditionally been used in contraposition to the concept of 'emission mitigation'. In other words, the key distinction in past and present climate change discourse has been between (impact) Adaptation and (emission) Mitigation, i.e. between an 'impact-centred' and an 'impact-free' category, as it were.

The Disaster Management Continuum. By contrast, the key distinction used by practitioners and analysts in the field of disaster relief is 'impact-centred' on both sides, for it is the distinction between *pre-* and *post*-disaster activities. The pre-disaster activities – collectively referred to as disaster *reduction* measures – are themselves sub-divided into disaster *prevention*, *-mitigation*, and *-preparedness*, while post-disaster measures are classified as *relief*, *rehabilitation*, and *recovery* measures (see Box 8).

Adapting or Managing? It is not difficult to see that this disaster management taxonomy could easily be adapted for use in climate impact discourse, indeed, the purpose of this section is to argue that it not only could be used in this manner, but that it should supersede 'adaptation talk.' 'But why?' one might reasonably wonder, 'Would that really make a difference?' Both taxonomies, after all, do seem to have considerable overlap: 'impact reduction' and 'proactive adaptation,' for example, – or 'reactive adaptation' and 'impact response,' for that matter – do seem to be very similar. Indeed, are they not really just the same?

There are at least three reasons why the adaptation nomenclature ought to be replaced by an impact management taxonomy. The first one involves the current practice in climate change discourse to separate climate impact related activities under the heading of adaptation from activities designed to mitigate greenhouse gas emissions. Under the impact management conception, by contrast, emission mitigation is

[99] Farhana Yamin (1998), 'The Clean Development Mechanism and Adaptation' Paper for the FCCC Secretariat Workshop Capacity Building For Project Based Mechanisms, Abidjan, 17-18 September 1998; Part I.
[100] IPCC TAR, vol. 2:982.

Box 8: The Disaster Management Continuum

Disaster 'A serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources.

The Pre-disaster Phase (Disaster Reduction)

- **Prevention:** Encompasses activities designed to provide permanent protection from disasters. It includes engineering and other physical protective measures, and also legislative measures controlling land use and urban planning.
- **Mitigation:** Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment.
- **Preparedness:** Activities designed to minimize loss of life and damage, to organise the temporary removal of people and property from a threatened location and facilitate timely and effective rescue, relief and rehabilitation.

The Post-disaster Phase (Disaster Response)

- **Relief:** Assistance and/or intervention during or after disaster to meet the life preservation and basic subsistence needs. It can be of emergency or protracted duration.
- **Rehabilitation:** The operations and decisions taken after a disaster with a view to restoring a stricken community to its former living conditions, whilst encouraging and facilitating the necessary adjustments to the changes caused by the disaster.
- **Reconstruction (recovery):** Actions taken to re-establish a community after a period of rehabilitation subsequent to a disaster. Actions would include construction of permanent housing, full restoration of all services, and complete resumption of the pre-disaster state.

Source: Internationally Agreed Glossary of Basic Terms related to Disaster Management, IDNDR/DHA 1992

recognised as an impact-related activity, falling under the category of 'impact reduction,' together with many – indeed, as we shall see most – of the adaptation efforts envisaged under the FCCC regime. This explicit recognition of the relation between emission mitigation and climate impacts is an important advantage of the impact management discourse over the current 'adaptation'-based discussion with its artificial conceptual segregation of greenhouse gases and climate impacts.

An equally, if not more important reason for rejecting the current terminology is the fact that the term 'adaptation,' in its general usage, carries certain connotations unacceptable in the climate change context. As witnessed in the relevant listing of the Oxford English Dictionary (Box 9), it is perfectly accepted usage to say that someone adapts a *thing* to another thing or another purpose. A thing, in other words, can be adapted by someone *else* (a person, a society ...). As exemplified in the listing of the biological meaning of the term, it is also perfectly meaningful that someone (a person, a society) is adapting. The one thing which simply is not part of common English usage is to say that someone adapts *someone else*.

Box 9: Adaptation /adəp'teɪʃ(ə)n/ *n* **in the Oxford English Dictionary**

- The action or process of adapting, fitting, or suiting one thing *to* another.
- The process of modifying a thing so as to suit new conditions: as, the modification of a piece of music to suit a different instrument or different purpose; the alteration of a dramatic composition to suit a different audience;
- *Biol.* Organic modification by which an organism or species becomes adapted to its environment.

Table 5: The Imbalances of the FCCC Regime

(a) The Traditional Imbalance

Mitigation	Adaptation
Framework Convention	
• National Communications • National Mitigation Plans • Return to 1990 emission levels by Annex I Parties in 2000 • promote, facilitate and finance the transfer of environmentally sound technologies and know-how to developing country Parties	• Annex II to assist the developing countries in meeting costs of adaptation to those adverse effects of climate change • Funding Mechanism (GEF); Special Climate Change Fund; Least-developed Countries Fund • Consider insurance-related actions at COP8
Kyoto Protocol	
• First Commitment Period (Annex B targets) • Flexibility Mechanisms: Emission Trading, Joint Implementation, Clean Development Mechanism • Commitment Regime • Sinks (Land-use and Land-use Change)	• The Kyoto Protocol Adaptation Fund • Consider at MOP1 the actions are necessary to minimize the adverse effects of climate change on developing countries such as the establishment of funding, insurance and transfer of technology.'
Proportion of Language in the Marrakech Accords	
[redacted]	[redacted]

(b) The Management Imbalance

Impact Reduction	Impact Response
• National Communications • National Mitigation Plans • Return to 1990 emission levels by Annex I Parties in 2000 • promote, facilitate and finance the transfer of environmentally sound technologies and know-how to developing country Parties • Annex II to assist the developing countries in meeting costs of adaptation to those adverse effects of climate change • Funding Mechanism (GEF); Special Climate Change Fund; Least-developed Countries Fund • First Commitment Period (Annex B targets) • Flexibility Mechanisms: Emission Trading, Joint Implementation, Clean Development Mechanism • Commitment Regime • Sinks (Land-use and Land-use Change) • The Kyoto Protocol Adaptation Fund • Consider at MOP1 the actions are necessary to minimize the adverse effects of climate change on developing countries such as the establishment of funding, insurance and transfer of technology.'	• Consider insurance-related actions at COP8

Adaptation, to be clear, need not be caused by conscious processes but can very well be 'spontaneous' (Box 7). Indeed, in biology, adaptation is generally regarded as a process by which an organism becomes fitted to its environment as the result of natural selection acting upon heritable variation. Yet, in the absence of genetic engineering, even this sort of adaptation is ultimately seen as something which the organism itself has to do, or die – something which no-one else can do for it.

This general 'do it yourself' conception – and even more so the 'or face the consequences' connotation of the biological meaning – entails that in describing impacts and impacts related activities in 'adaptation' terms, one can justifiably be taken to subscribe to the view that the burden of management has to be borne by the individuals and societies threatened by the impacts, that the onus ultimately has to be on them to adapt. Given the well known differentiated responsibilities for climate change and the disproportion of impact burdens which – as we saw in Part I – is the key equity issue, such a view is morally unacceptable. In its current usage, the term 'adaptation,' is inappropriate in the context of human climate impacts because of morally unacceptable connotations.

Finally, for the present purposes, the impact management nomenclature has the advantage of bringing to the fore another whole range of impact-related activities which have hitherto largely been neglected in the multilateral climate change regime. In the first part of this study it was argued that there has been an imbalance between the traditional poles of mitigation and adaptation. Table 5a. lists a selection of decisions and instruments adopted in the regime either under the Framework Convention or the Kyoto Protocol, and it illustrates this 'traditional' imbalance with a graphical representation of the proportions of language in the Marrakech Accords – the most recent and extensive operationalising text of the regime – devoted to the two traditional categories.

Yet the impact management taxonomy – with its impact reduction versus impact response dichotomy – reveals a further, even starker imbalance in the regime. As illustrated in the second part of the above-mentioned Table – '(b) The Management Imbalance,' where the items listed in the first half are re-grouped in accordance with the impact management dichotomy – there is a complete dearth of impact *response* measures among the decisions under the regime so far. Indeed, it seems that the recent resolution to look at insurance issues may well be the only decision focussing on what should be done once impacts have happened.

Conclusion. Why this should be so is indeed very interesting and, as we shall shortly see, very telling. The conclusion to be drawn here in answer to the above question is that – while acknowledging the semantic fluidity of language – it would be unwise to let oneself be taken hostage to semantic fortune hoping that the usage of 'adaptation' will change sufficiently (and timely) to avoid its current fatal shortcomings. Instead, it is argued, 'Impact Management' should be adopted as the overall task of the regime, and 'Adaptation' *qua* impact reduction activity be replaced by something like 'Vulnerability Reduction'.

6. INTERNATIONAL WEATHER-RELATED DISASTER RELIEF: THE 'DEMAND-SIDE PICTURE'[101]

6.1. 'Business-as-Usual'

It is difficult to envisage circumstances under which neglecting a person or a people could be justifiable. In dealing with issues, however, 'neglect' need not necessarily be a bad thing. There may be good reasons why a certain issue has not been and is not addressed, if only because it may simply not matter. The aim of this section is to argue that the past and present neglect of impact response measures in the multilateral regime identified in the previous chapter is actually *not* justifiable in this manner, that it is due to a degree of 'temporal presbyopia' (the inability to focus on things that will happen in the nearterm) which in the climate change context may not just reflect neglect but outright negligence.

The High Confidence Statement. Having re-emphasiswed the key to the impact equity problem – the fact that developing countries tend to be more vulnerable to climate change and are expected to suffer more adverse impacts than developed countries[102] – the 'Global Issues and Synthesis' chapter of Technical Summary (TS) produced by Working Group II for the recent IPCC *Third Assessment Report* (TAR) turns its attention to extreme weather events – such as floods, soil moisture deficits, tropical cyclones, storms, high temperatures, and fires. Acknowledging that a large proportion of climate and climate change impacts are related to extreme weather events, the Summary expresses the view that *with a high degree of confidence even a small increase in (global mean) temperature will result in an increase in frequency and magnitude of many extreme climate events*, which, in turn,

> would have adverse effects throughout sectors and regions. Agriculture and water resources may be particularly vulnerable to changes in hydrological and temperature extremes. Coastal infrastructure and ecosystems may be adversely affected by changes in the occurrence of tropical cyclones and storm surges. Heat-related mortality is likely to increase with higher temperatures; cold-related mortality is likely to decrease. Floods may lead to the spread of water-related and vector-borne diseases, particularly in developing countries.'[72]

Past, Present or Future? 'A central problem in planning for adapting to climate change and estimating the impacts of climate change,' according to the final Synthesis Chapter of the Working Group II TAR-contribution, 'is how [the] statistics of extreme events are likely to change'[947] due to climate change effects. At the root of this problem, according to the TAR authors, is that expectations about the future values of these statistical parameters based on recent historic data are unlikely to be fulfilled due to climatic change. The cautious nature of these statements may be justified given the politically sensitive character of the topic. However, one needs to be equally cautious not to be mislead by the *caveat*: the way in which the potential break-down of the methodology is described – in terms of failures of past trends to be predictive because of future changes in the underlying reference conditions – could easily lead one to believe that the past data are 'climate change free' as it were, and that the uncertainty of their predictive power is an uncertainty associated with an as yet

[101] The author would like at this point to extend special thanks to his OIES colleague, Dr John Bower, and to Dr Brian Buck of the Department of Theoretical Physics (University of Oxford) for having made available to him their considerable data analysis skills, far exceeding anything he could have mustered himself. However, he would also wish to emphasise that all mistakes remain exclusively his own responsibility.

[102] See Section 7.2.3. on Distribution of Impacts of the 'Technical Summary' in *Climate Change 2001: Impacts, Adaptation, and Vulnerability.*

Box 10: Disaster Management. Categories and Definitions

Natural Disasters

Weather-related (Hydro-meteorological) Disasters
droughts; floods; storms (cyclones, hurricanes, typhoons); cold/heat waves, fires

Geophysical Disasters
earthquakes; tsunamis; volcanic eruptions; landslides; mudflows; avalanches

Complex ('man-made') Disasters
conflicts (wars, civil wars)

CRED EM-DAT Definitions

Disaster. A situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance. In order for a disaster to be entered in EM-DAT at least one of the following criteria has to be fulfilled: (i) 10 or more people reported killed; (ii) 100 people reported affected; (iii) a call for international assistance; and/or (iv) declaration of a state of emergency.

Killed. People confirmed dead, or missing and presumed dead.

Affected. People requiring immediate assistance during a period of emergency, i.e., requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance. In EM-DAT, the total number of people affected includes people reported injured, homeless and affected.

Source: *WDR2001*:171.

undetected phenomenon. This, however, is not implied by the authors' statement. Indeed, in light of the 0.6 ± 0.2°C rise of global mean temperature in the twentieth century (IPCC TAR vol. 1), and the fact that the validity of the high confidence statement concerning the causal link between small such temperature increments and increases in the magnitudes and frequency of extreme weather events is not tied to some particular time period, it would be curious to find no climate (change) impacts in the recent past at all.

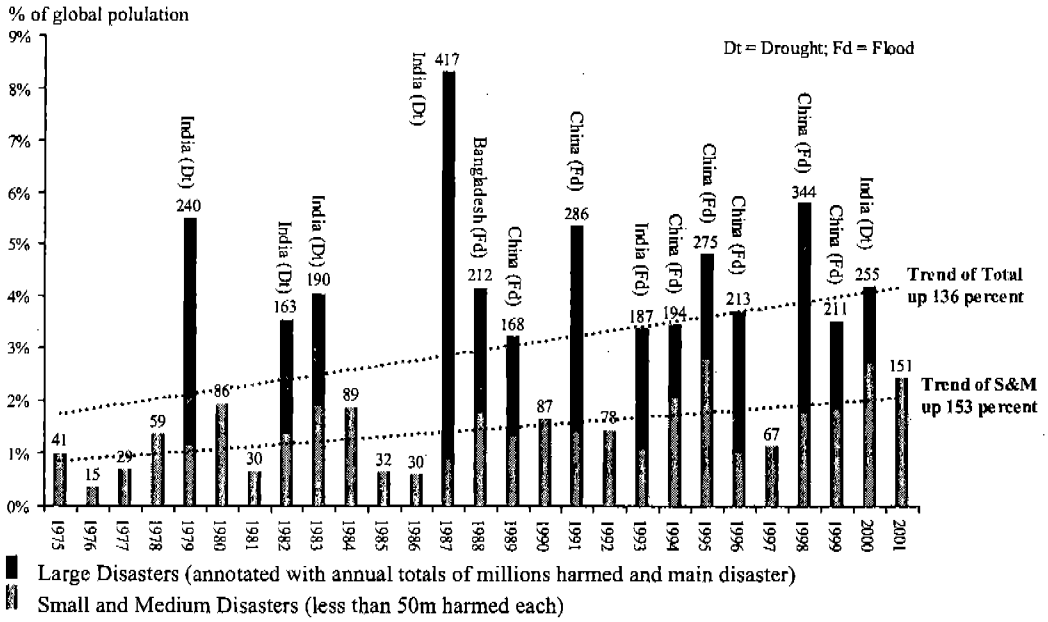
So if the increase in global mean temperature in the past century has caused an increase in the magnitude and frequency of extreme weather events, chances are that the latter would be mirrored in the measure of the most immediate human impact of these hazards: the number of people affected by weather-related disasters (as categorised in Box 10). Figure 5.a illustrates the relevant data (from the Emergency Events Database EM-DAT maintained by the WHO Collaborating Centre for Research on the Epidemiology of Disasters CRED) concerning people affected by weather-related disasters between 1975 and 2001. A distinction is made between 'Small,' 'Medium,' and 'Large' disasters, depending on the number of people affected, namely less than 1 million, between 1 and 50 million, and more than 50 million, respectively. In order to exclude pure population trends, the illustration uses percentages of global population figures (with annotated total annual figures in millions). The linear trend of the annual global proportion of people affected by small and medium disasters has significantly increased (up 153 percent[103]) over the last 26 years. And similarly for the numbers of people affected by large weather-related disasters, which (as indicated in the figure) have either hit China or South Asia. The linear trend of the global proportion of people affected by all hydro-meteorological disasters has increased by 136 percent. Figure 5.b, in turn, illustrates a running

[103] In order to avoid confusion, I shall use '%' to indicate percentage points and 'percent' to refer to relative changes: e.g. a change from 10% to 20% (say of global population) is an increase of 10% and a relative change of 100 percent.

average frequency analysis of the same data base. Its columns represent the averages over the preceding five years. As depicted, the linear trend of these running average numbers also more than doubled over the period.

To be clear, the concurrence of an increase in global mean temperature with increments in frequency and magnitude of weather-related human disasters, by itself, does not 'prove' that (anthropogenic) climatic changes have been the cause of this rise

(a) ***Magnitudes in terms of Percentages of Global Population Affected***



(b) ***Annual Frequencies (running averages over the preceding 5 years)***

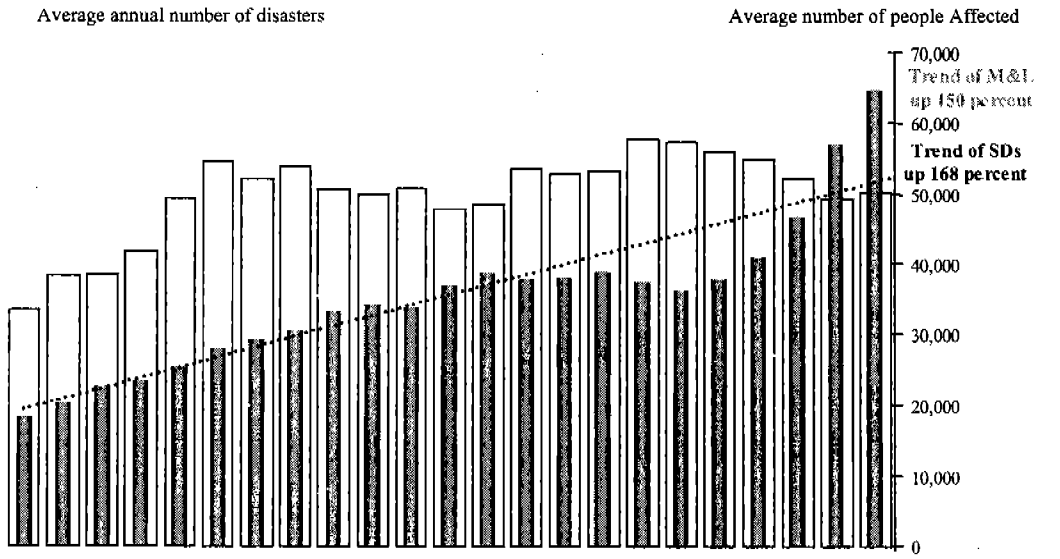


Figure 5: Weather-related Disasters 1975–2001.

Data Source: http://www.cred.be/emdat/

in misery. For one, there are other weather-related phenomena – such as the El Niño/Southern Oscillation (ENSO) effects – which can influence the pattern of weather-related natural hazards. And then there are socio-economic factors which can influence the magnitude of the impacts on individuals and society of these hazards: 'Development patterns can increase vulnerability to extreme events. For example, large development along coastal regions increases exposure to storm surges and tropical cyclones, increasing vulnerability.'[TS:p.72]

Yet, to be equally clear, the concurrence of the temperature increase with the increasing disaster magnitudes and frequencies is perfectly consistent with the latter having been caused to a significant degree by (anthropogenic) climatic changes. In short, the scenario that human climate change *impacts* – far from being relegated to the future – are with us this very moment should not be dismissed just because it has not been established with certainty, or because – unlike, say, the AIDS pandemic – climate impacts are not instantly recognisable as a new category of things: our age-old familiarity with weather-related hazards and disasters should not breed a prejudicial contempt for the possibility of their climatic, indeed anthropogenic origin. And even if climatic changes should turn out to be 'less responsible' than the other potential contributing causes, the fact remains that the misery has increased significantly over the period which, ultimately, turns the 'attribution issue' – what proportion of changes in impacts can be attributed to (anthropogenic) climatic interference – somewhat 'academic' in the not so flattering sense of the word.

6.2 Regression Trend Projections

Based on the figures concerning the number of people globally affected by weather-related disasters over the past three decades depicted in Figure 5, Figure 6 illustrates different 'Business as Usual' (BaU) trend extrapolations to 2030. The term 'business as usual' is here simply meant to reflect the hypothetical assumption that all the relevant determinants of these disaster figures continue to evolve on average in the coming three decades as they did in the past three. The extrapolated figures thus obtained are projections primarily intended to help policy-making by trying to provide answers to the most important decision-making tool: the question '*What if...?*'

Simple regression analyses of four different types (linear-, logarithmic-, exponential-, power-regressions, see Box 11) generate trend-lines that are extrapolated to the 2030 time horizon. As before, two data sets are considered: the total figures ('All disasters') and the figures pertaining to the medium and small disasters (M&S), affecting less than 50 million people each.

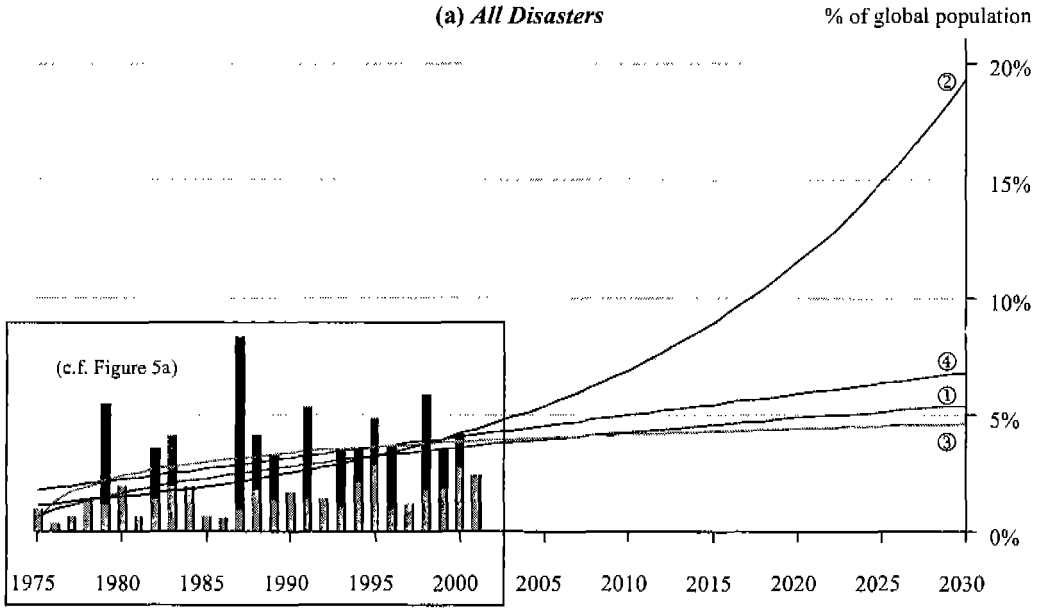
Box 11: The BaU Extrapolation Methodology.

Given a particular functional form $y = f(x; a, b)$ with x as free variable and a and b as regression parameters –such as

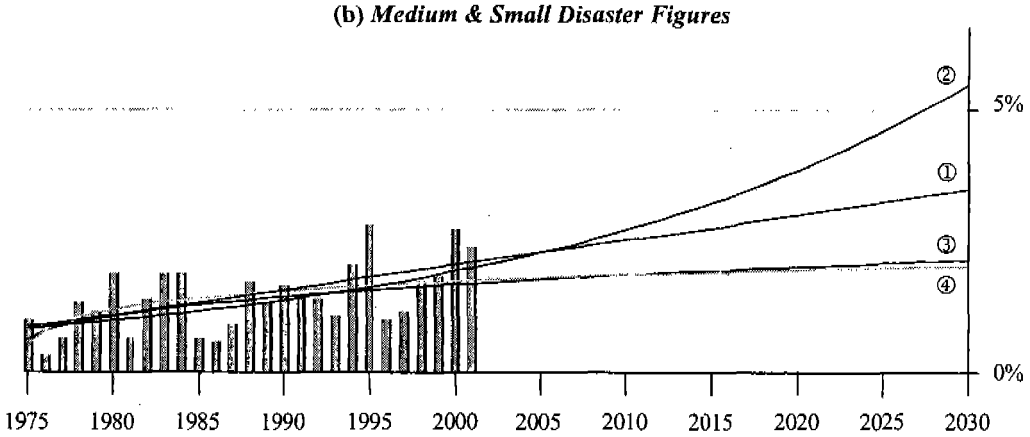
$$y = a\,x + b \text{ (linear)}, \; y = a \ln(x) + b \text{ (logarithmic)}, \; y = a\,e^{bx} \text{ (exponential)}, \text{ and } y = a\,x^{b} \text{ (power)}$$

– a least square fitting procedure is used to find the parameter values under which the functional form best fits the given data. Given this best fit trend-line formula, the extrapolation simply consists in calculating its value for the period of 2030. To compare 'fits' across functional forms, a coefficient of determination ('R-squared') is used, ranging from 1 (best fit) down to 0 (least fit)

(a) *All Disasters*



(b) *Medium & Small Disaster Figures*



(c) *Legend and Data Table*

*Rank**	*Regression Type*	*2001 Increment* % of 1975 level	*2030 Trend Value* % of population	*Trendline Formula*	*Determination Coefficient*
All disasters					
①	Power	477	5.3	$y = 0.0062\ t^{0.532}$	$R^2 = 0.2842$
②	Exponential	280	19.0	$y = 0.0107\ e^{0.0514t}$	$R^2 = 0.2358$
③	Logarithmic	576	4.5	$y = 0.0098 \ln(t) + 0.0056$	$R^2 = 0.1742$
④	Linear	136	6.7	$y = 0.0009t + 0.0163$	$R^2 = 0.1343$
Medium and small disasters **(Total Range: 1975–2001)**					
①	Linear	153	3.6	$y = 0.0005t + 0.008$	$R^2 = 0.3173$
②	Exponential	150	5.7	$y = 0.0079\ e^{0.0352t}$	$R^2 = 0.3096$
③	Power	188	2.2	$y = 0.006\ t^{0.3214}$	$R^2 = 0.2893$
④	Logarithmic	257	2.1	$y = 0.0039 \ln(t) + 0.005$	$R^2 = 0.2636$

***Medium and small disasters*. Linear Regressions for (a) 1975–1990, and (b) 1990–2001**

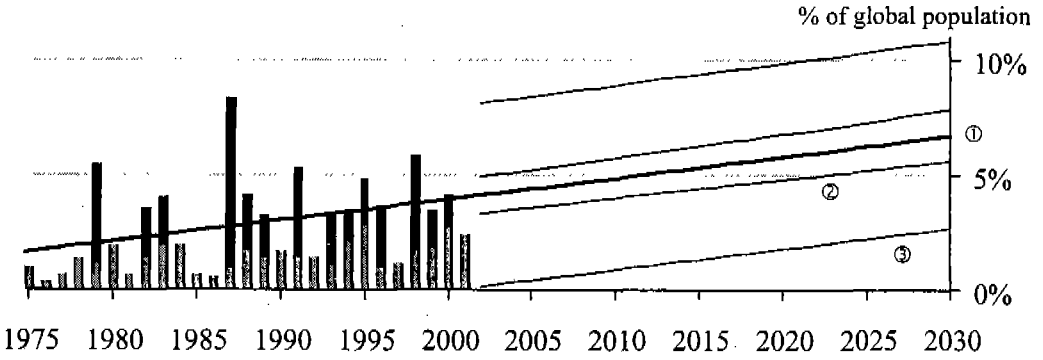
(a) $y = 0.0004\ t + 0.009$

(b) $y = 0.0008\ t + 0.0127$

*In order of decreasing R^2.

Figure 6: Weather-related Disasters. 1975–2030. 'Business as Usual' Magnitude Trend Extrapolations in terms of People Affected as Percentage of Global Population

The 'Medium & Small' disaster data – less variable than the total data set – have the *linear* regression trend line as best fit when compared in terms of their coefficient of determination (followed by exponential, power and logarithmic, in that order, see Figure 6). However, being all quite similar, none of these coefficients actually manages to single out a regression as being much better than the others. The relatively best fitting linear regression has the advantage of generating a 2030 projection which lies just about half-way between the other ones (Fig. 5.b). Having said this, linear regressions over different intervals suggest an increasing trend over the time horizon,[104] and that using the regression over the whole data set for extrapolation is likely to deliver a conservative projection.



① *L-BaU* trend-line and projection
② 95% confidence interval for trend values
③ 95% prediction intervals for individual point estimates

Figure 7: People Affected by Weather-related Disasters. The 'Best Guess' Projection
Source of statistical data: John Bower

When adding the figures concerning large disasters (more than 50m affected) to the data discussed in the previous paragraph, the data becomes rather more variable and has the effect of relegating the linear regression method from the top to the bottom of the class. Indeed, the fit of all but the worst of the M&S regressions is better than the fit of all of the regressions on the total data set. Yet given that three out of the four regressions – including both the top (power-) and the bottom (linear-) fits – are similar in their 2030-projections at around 6%, choosing the linear regression result becomes a rather inconsequential matter of taste.

The L-BaU Projection is generated by adding the linear trend to our general BaU-specifications. Given the alternatives discussed above, this scenario can reasonably be described as providing the 'best-guess' projections under our BaU assumptions. Keeping in mind that the data set considered is not particularly large and that there is a significant variability, the t-statistics of the linear regressions (1.97 for the totals, 3.41 for M&S) under this scenario allow us, in particular, to be more than 95% (totals) and 99.5% (M&S) certain that there has been a real upward sloping trend over this period and that the result is not a spurious or 'chance' association. In other words, treating the observed data as a random sample of long-term process, we can be 95% or 99.5% confident that the slope of the underlying trend is positive. 'Business-as-Usual' therefore is not business-at-the-current-impact-level, it is business at the

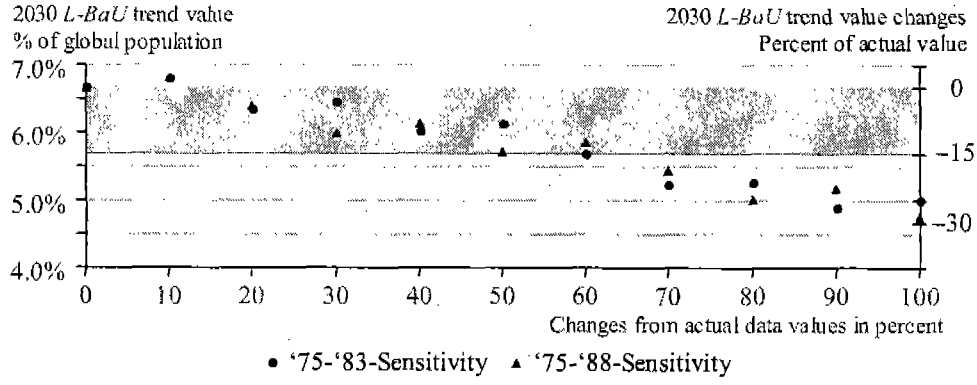
[104] As listed in the Table in Fig.6c, the linear trend of the M&S data set grows at an annual rate of 0.04 percentage points, double that of the 1975–1990 data, with the over-all 1975–2001 M&S trend falling between the two with an annual growth of 0.05 percentage points

current *upward sloping* trend in the global proportion of people affected annually by weather-related disasters.

Confidence Intervals. As a matter of fact, further statistical analysis reveals that our linear projection is reasonably well-behaved. According to this analysis, we can be 95% confident that, under BaU conditions, for 2030 we can *on average* expect between 5.7% and 7.9% of global population to be affected by weather-related disasters (see Fig. 7). We can be equally (95%) confident that the 2030 value itself will fall between 2.7% and 10.8% of global population. In other words, with respect to our *L-BaU* methodology, we can be highly – if not very highly – confident (using the official IPCC terminology) that by 2030, there will *on average* be between 456 and 632 million people affected by weather-related disasters, while the figure could be as high as 864 million people.

Data Reliability. Data are not always as reliable as one would wish them to be. Reporting standards and definitions may change over time, or there may be problems with the completeness of the data themselves. The question thus has to be: how confident can we be that 'better' data would not produce (significantly) lower 2030 projections of, say, 1% or more – i.e. a drop which would put the trend value outside the 95% confidence interval for trend given in our actual data?

Box 12: Sensitivity. Variations in the Initial Segments of the M&S Disaster Data



The two graphs represent the 2030 linear trend value estimates (left-hand scale) and their relative changes from the original value of 6.8% (right-hand scale) under uniform percentage increments (in 10% steps) of two initial segments of our Medium & Small Disaster figures, namely the data for the years 1975-'83 (leading to the *'75-'83-Sensitivity* graph), and those for the years 1975-'88 (*'75-'83-Sensitivity*).

It stands to reason that larger disasters – given their prominence and their relative smaller number – are more likely to be reflected accurately in our data set than smaller ones. I shall also make the hopefully not completely unwarranted assumption that, if anything, there has been progress in the recording of these disaster figures. In short, my concern here will be with the early figures concerning what was referred to as 'Medium and Small disasters.'

In the absence of any information about the data over and above their numerical value, the only way to judge the degree of confidence in the projection they give rise to is to consider the sensitivity of our projections to variations in the data. The figure in Box 12 shows that the *L-BaU* projection remains remarkably robust under magnifying variations of the M&S disaster figures for the initial third and the first half of the time series. Indeed, to produce the afore-mentioned one percentage point drop

in the 2030 linear trend extrapolation, the data of these initial years would have had to have been systematically underestimated by at least 60% (see Box 12).[105]

Plausibility Check. Regression extrapolations – even if scenario-specific – need to be subjected to a 'plausibility check'. In the present case, one might thus reasonably ask how the projected figure could conceivably materialise? As it happens, it is not difficult to imagine situations – such as a concurrence of the floods in India 1987 and China 1998 which would have totalled 612m affected people – that would easily surpass the projected trend value of 544m people (6.8%) even now.

6.3. Climatic Variations from BaU

This linear 'business as usual' projection, while on the conservative side, obviously depends on the underlying *ceteris paribus* assumptions. Before drawing any conclusions, it is advisable to test the robustness of these assumptions. Or, more to the point, to ask whether contrary to these BaU assumptions, things might actually change in ways which would make this projection too pessimistic.

In the absence of a causal model of how the different contributing factors interact in determining the disaster figures, probably the only way to approach this question is again by considering some simplified hypothetical situations. Consider thus the possibility of 'natural' positive changes of some of the underlying determining factors – namely global mean temperature change and ENSO – under the assumption that they are the dominant determinant in these disaster statistics. What are the chances that either of these factors could change over the next three decades in a manner which would in any way reverse the trend in these disaster figures 'naturally' without the need for additional policies and measures?

(a) *Temperature Change (TC-) Dominance.* Consider first the scenario where the disaster increases over the past three decades are assumed to be principally due to the increase in global average temperature. What are the chances that this trend is going to reverse itself naturally over the next three decades? The answer, unfortunately, is: very slim indeed. According to a study published by Francis Zwiers in a recent issue of *Nature*, it is 90% certain that the global mean temperature in the 2020s will be 0.3-1.3 °C greater that that of the 1990s (see Fig. 8). And, more to the point, because of effects such as the large thermal inertia of the oceans, this increase is projected *whatever the assumed emission scenario, i.e. even if we stop all emissions completely*

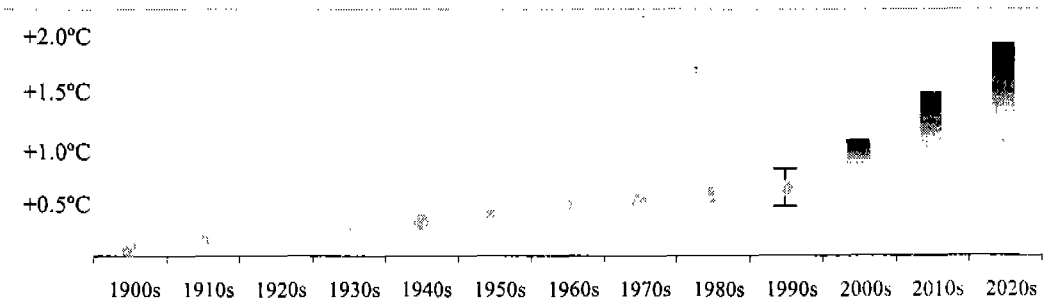


Figure 8: Average Decadal Increments in Global Average Temperature. 20th Century Data and the 20-year *Nature* Forecast

Source: Francis W. Zwiers, 'The 20-year forecast,' *Nature* Vol. 416 (18 April 2002), pp.690-91.

[105] Note that the more plausible 10% underestimation figure would actually *increase* the 2030 linear trend projection by about a tenth of a percentage point.

– in short, we have passed the moment of preventing additional climate change impacts in the next 30 years by emission mitigation measures.

L-BaU (TC) Projections. The following '*Temperature Change*' (*TC*) variations of the *L-BaU* projection are attempts to incorporate these temperature predictions into our linear projection by way of a simple linear model. The model is based on the

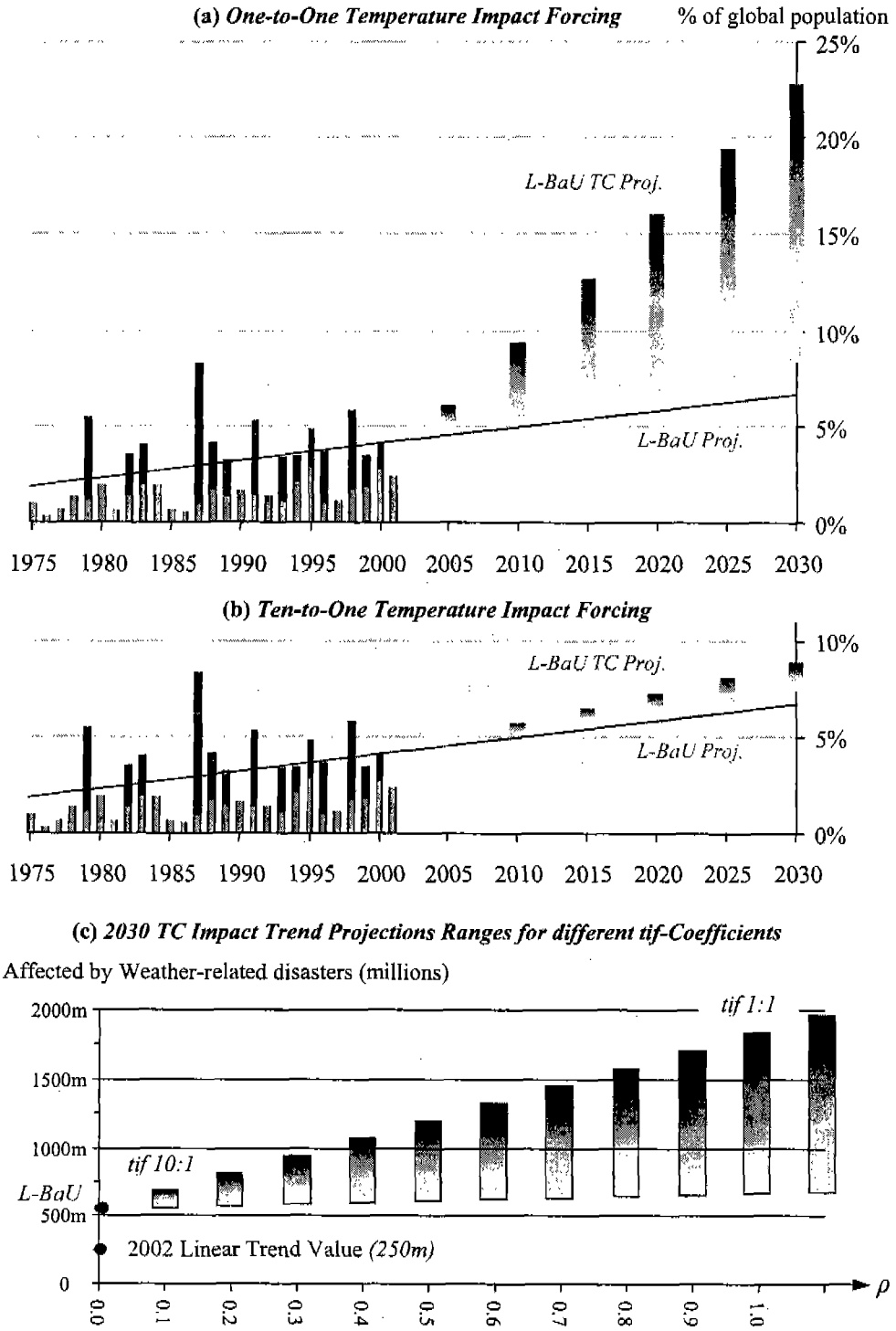


Figure 9: The *L-BaU* and *L-BaU* (*TC*) Projections

assumption that – all else being equal (i.e. BaU) – an increment in the temperature-trend growth-*rate* (τ) 'forces' an increment in the impact-trend growth-*rate* (ι). In light of the choice to focus on linear trends in our base projection *L-BaU*, the model assumes that the 'forcing' in question is itself linear – i.e. that $\tau = \rho \cdot \iota$, for some 'temperature impact forcing' (tif-) coefficient ρ. Within the context of this simple linear model, the key issue is to estimate the size of this coefficient. The uncertainties involved in this are, of course, precisely those referred to in the TAR authors' methodological *caveat* mentioned earlier. In the absence of past estimates,[106] probably the best that can be done to illustrate the potential impact of these temperature effects on future disaster impact trends is to pick two 'marker scenarios' which – given the linearity of the model – will delineate the impacts as a function of these coefficients. Figure 9 depicts the projected evolution of the impact trend ranges associated with the range of 90% certain temperature increases over the next three decades for two tif-coefficients, namely $\rho = 1$ ('one-to-one-forcing'), and $\rho = 0.1$ ('ten-to-one-forcing'). The temperature data used are the average decadal increments depicted in Figure 8, namely 0.06°C for the past century, and a range of between 0.1°C to 0.43°C for the projected average decadal temperature increases over the 90%-confidence interval, implying an increase of between 67 and 622 percent over the past 0.06°C.

1:1-tif. The case of one-to-one-forcing – of a 1 percent growth increase in the trend of people affected for every 1 percent increment in temperature-trend growth – is illustrated in Figure 9.a. In this case, the above-mentioned range of increases in the *L-BaU* growth-rate leads to a range of adapted linear impact trend projections for 2030 of between 8% and 23% of global population. Based on the 2030 population projection of 8bn in Lutz *et al.* (2001),[107] this in turn translates into a truly worrying 2030 trend value range of between 0.64 and 1.84 *billion* people.

10:1-tif. In the case of ten-to-one-forcing – with a 1 percent impact growth increase for every *10* percent increment in temperature-trend growth – we find a range of 2030 trend values of 7.6 ± 0.7 % (Figure 9.b) or about 610m people, a figure much lower than the 1:1-tif, but which still exceeds the (1987) maximum of the annual *totals* over the past three decades by 46 percent.

2030 Impact Trend Ranges. Given the linear character of the underlying model, these two scenarios determine the variability of the impact ranges relative to the choice of *tif*-coefficient ρ. Figure 9.c illustrates this variation for the year 2030 in terms of projected millions of people affected by weather-related disasters, beginning with the 2030 *L-BaU* trend value of 544m (6.8%) as the 'no-forcing value' ($\rho = 0$), and ending with the range for the case of 'ten-to-eleven-forcing' ($\rho = 1.1$). Even at the lower end of these forcing coefficients, the sizes of the projected impact trends are still considerably higher than the current linear trend value of 250m.[108]

(b) *ENSO-Dominance.* What if the increase in the number of people harmed over the last three decades has primarily been driven by ('natural') El Niño effects? A cursory look at the graph of the Southern Oscillation Index (SOI) included in Box 13 might suggest that the El Niño phenomenon is subject to oscillations of different time-scales. Indeed, it might suggest that since the 1960s, the magnitudes of El Niños have

[106] If there were differentiated decadal temperature growth figures, then it might be possible to use the past disaster data to carry out such estimates.
[107] Wolfgang Lutz, Warren Sanderson, and Sergei Scherbov (2001), 'The End of World Population Growth,' *Nature* vol. 412, 2 August:543–5.
[108] Current trend value 4.1% of 6.1bn ≈ 250m.

been on the increase following a long-term cycle which appears to have reached its apex in the late '80s: comparing the SOI data (for El Niño years) with our EM-DAT disaster figures, after all, shows (Fig. 10) a remarkable correlation between the two, at least after 1980.[109]

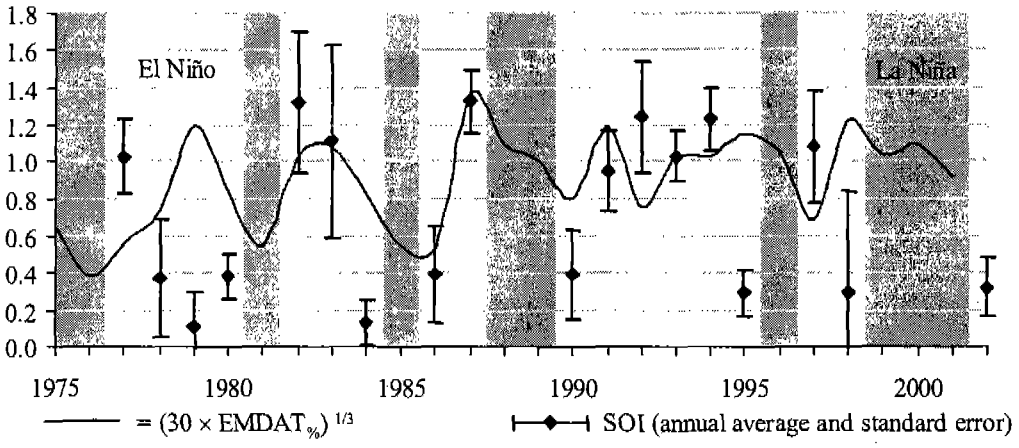


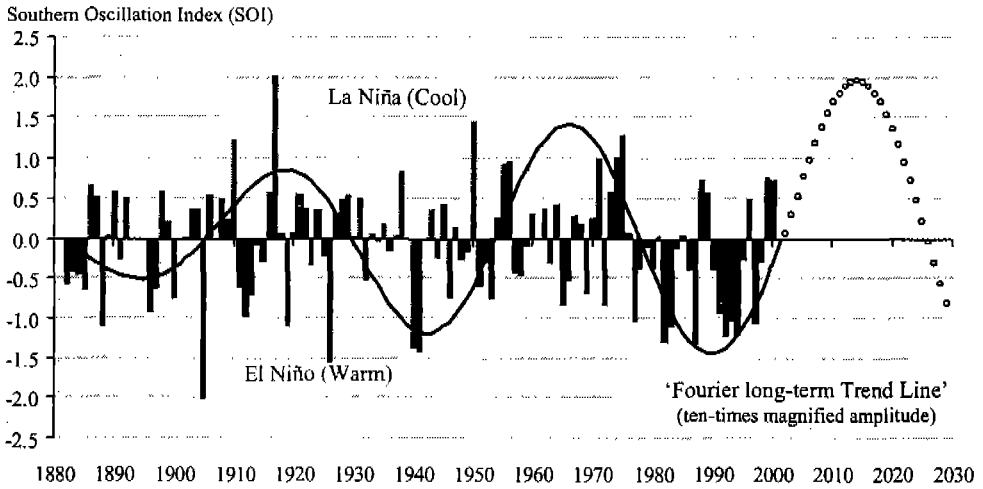
Figure 10: ENSO and Disaster Correlation. 1975–2001

The El Niño data of the last three decades thus not only appear to be perfectly consistent with the assumption that ENSO effects are the dominant driver of our disaster figures, but also with the hypothesis that consequently the problematic trend in our disaster figures will rectify itself 'naturally' without the need for additional policies and measures. To be quite clear – unlike in the case of our *TC*-dominance scenario – there is no certain scientific evidence of such long-term trends in ENSO activities. The point of scenarios, however, is precisely to deal with such uncertainties by asking: 'What if?' Indeed, for the present purposes the precise question is: '*What* would be the effect on our linear BaU projections, *if* the ENSO phenomenon did have a long-term cyclical nature (of the type described[110]), and if the disaster figures were predominantly determined by ENSO effects?'

L-ENSO Projection. Figure 11 depicts some simple linear projections based on this natural cycle argument. The underlying assumption of this *L-ENSO* projection is that, everything else being equal (i.e. BaU), a reversal in the El Niño cycle (*qua* dominant determinant for the past impact trend) would return the world to the mid 1970s impact trend values of around 1.7% by 2030. However, this is not where the ENSO-dominance story would be likely to end. For one, there are certain plausible feed-back mechanisms between changes of (global average) temperature and ENSO activity which have to be accounted for (Box 13), even if one assumes that the past weather-related disaster statistics were driven purely by natural ENSO effects. For example, take the fact that the area of the tropical Pacific that has mean temperature greater than 27°C is 20% larger than that greater than 27.5°C.'[111] which entails that even an apparently modest temperature increase of 0.5°C could produce large changes in the area in which convection – one of the key El Niño impact mechanisms – takes place.

[109] The disaster percentage data ($EMDAT_{\%}$) being roughly proportional to the cube of the SOI data.
[110] The only variations from BaU of interest here are the ones where our linear BaU projections would turn out to be much too pessimistic.
[111] http://www.pmel.noaa.gov/~kessler/occasionally-asked-questions.html#q16

Box 13: El Niño/Southern Oscillation (ENSO) and Climate Change



The Southern Oscillation Index. 1882–2001. Annual Monthly Average

Data Sources: SOI: http://www.cpc.ncep.noaa.gov/data/indices/ ; Spectral Cycle: Courtesy of Brian Buck

One way that a general global warming could affect El Niño is through the sensitivity of tropical deep convection (organized thunderstorms involving strong upward motion over large regions) to the water temperature beneath. Convection occurs only over warm water, which provides both moisture and the heat to produce strongly rising air. But convection does not increase at a steady rate as water warms; at around 27.5°C it suddenly becomes much more efficient, and the warmer-than-27.5°C areas are often identifiable in satellite images by the strong development of rainstorms penetrating high into the atmosphere. Huge amounts of heat and moisture are pumped out of the tropical ocean into the upper atmosphere, and that energy source is one of the main engines of the global weather systems. Perhaps the primary way that effects of El Niño spread to extra-tropical regions is through increasing the area and location of tropical convection (with its consequent effects on the jet streams) as the warm water extends further east than usual.

Since there are large regions of water with temperature close to 27.5°C, even a small general temperature change could produce large changes in the area in which convection takes place. ... A mere one-half degree uniform increase could produce a significant change in the amount of tropical convection, perhaps making the normal state appear more like El Niño. Tropical convection thus has the potential to amplify the disruption of global climate, perhaps far out of proportion to a seemingly small temperature change. So, while the values of temperature rise proposed in the global warming debate appear small, ... the danger lies in the reorganization of the large nonlinear systems that regulate the entire weather machine. There may well be feedbacks that would damp out some of these influences on the tropical convection process (or possibly amplify them even more). ... But no one should argue that because the overall values of temperature change seem small, or that a computer model of the effects of greenhouse warming may be wrong by a significant percentage, the effect on human society could not be drastic.

The connection could also go the other way, although this is not often considered. The forest fires due to El Niño occurring these past few months in the Amazon and Indonesia are contributing strongly to the increase of CO_2 in the atmosphere, and also reducing the forest cover that absorbs CO_2. Therefore El Niño appears to be part of the problem of greenhouse warming.

Source: http://www.pmel.noaa.gov/~kessler/

And, given the predictions about the temperature increments in the next three decades, one can say with *high* confidence that this 0.5°C threshold will be breached and that this may lead to significant additional weather-related hazards. Again, it is very difficult to say anything about the quantitative impacts this may have on our disaster figures. The *L-ENSO (TC) Projection* depicted in Figure 9 is again based on a very

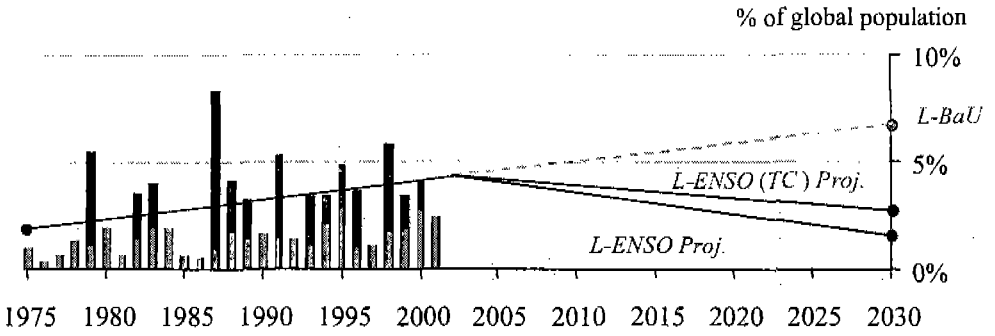


Figure 11: The Linear *ENSO* and *ENSO (TC)* Projections

simple linearity assumption equating the relative impact increment with the above-mentioned surface area increment (i.e. 20% of the current level), which would lead to a 2030 impact trend value of 2.6% or 208m people affected by weather-related disasters, 17 percent below the current number.

(c) *The 50–50 Projection*. The two 'climatic variants' of our *L-BaU* scenario are based on the assumption that one of the many factors determining our disaster impact statistics dominates all others. Chances are that this is not really the case. Given the sort of feed-back mechanisms between global mean temperature variations and ENSO activities described in Box 13, it would be particularly surprising to find either of these climatic phenomena completely overshadowed by the other one as cause for weather-related disaster impacts.

Figure 12 depicts an attempt to model a more balanced situation within the simple linear modelling framework adopted earlier to analyse these two climatic phenomena as dominant factors in determining impact figures. It is based on the assumption that half of the linear trend inherent in our disaster figures is due to ENSO activities and the other half due to temperature change. Figure 12.a illustrates the projection of the 'ENSO-half' according to the model used in section (b). It projects a 2030 return to 1970s impact trend level under the 'natural' El Niño cycle, and the somewhat higher levels estimated for an additional 0.5°C increase in global meant temperature over the projection horizon. Figure 12.b, in turn, illustrates the result of applying our TC-dominance model to the other half of the historic linear trend figures. It illustrates the range of trend figure projections under 2:1-*ti*-forcing (ρ = 0.5, see above) for the range of projected temperature increases of between 0.3 and 1.3°C. Indeed, for the sake of compatibility with the *50-50 ENSO (TC)* projection with its assumed minimum increase of 0.5°C, it does the same for the 0.5 to 1.3°C range (coloured bars). Figure 12.c, finally, shows the linear combination of these two causal factors, resulting in the '*50-50 TC Projection*' where the upward pressure of the TC-dominant parameters are partially countered by the projected natural downward trend of the *ENSO*-dominated parameters, resulting in a projected range of between 0.5 and 0.7 billion people (5.8 and 8.7% of global population) on average affected by weather-related disasters by 2030. As it happens, this projected range of impacts under the 50-50 mixed causality adaptation of our original business-as-usual assumptions is perfectly consistent with our original 'best-guess' 2030 linear trend extrapolation of 544 million affected people (6.8%), or more than double the current linear trend-value of 250m.

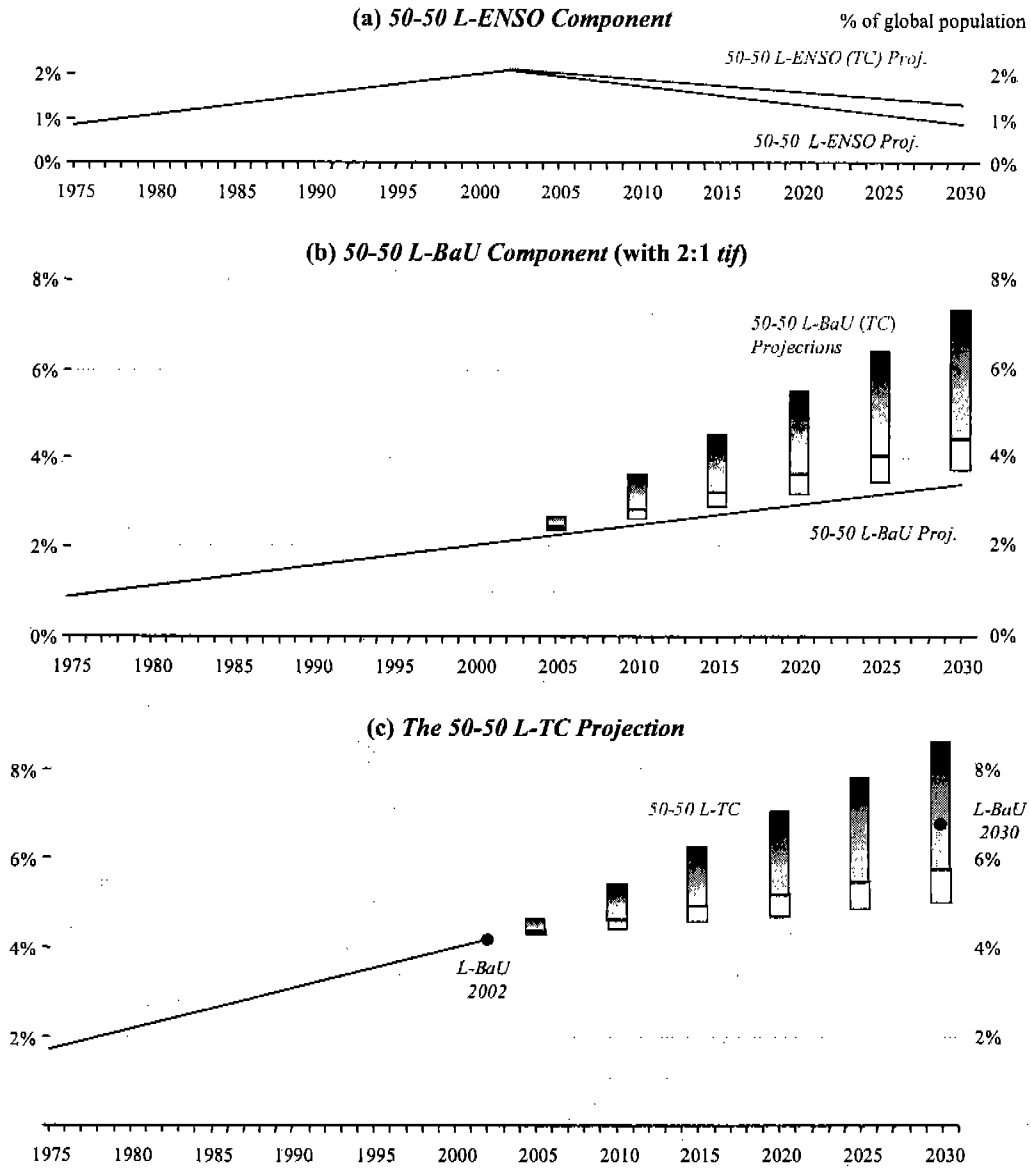


Figure 12: Mixed Causalities: The *50-50* Linear *TC* Projection

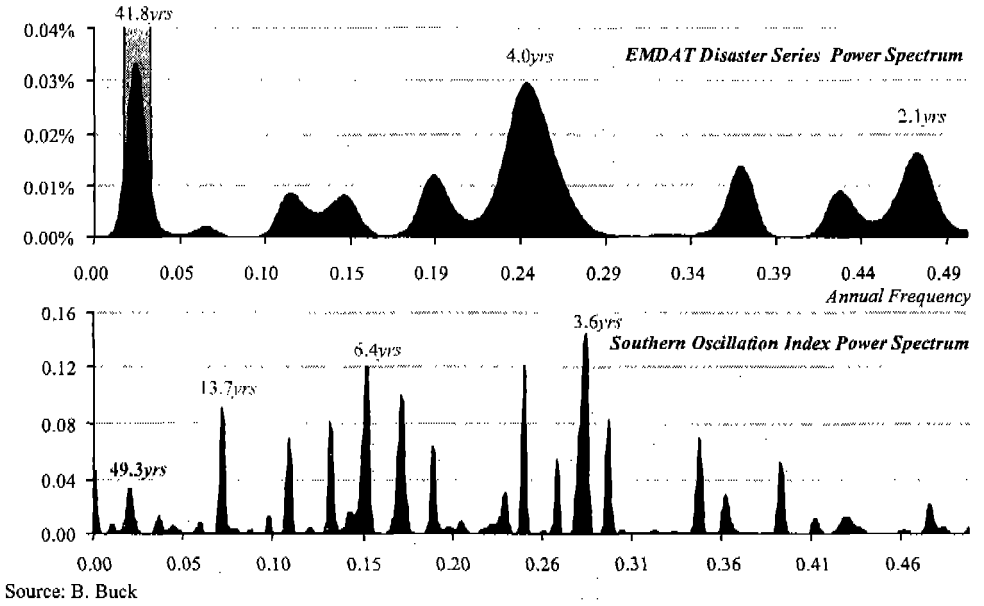
To be sure, these remarks on potential 'climatic variations' from the BaU *ceteris paribus* assumptions underlying our regression analyses are mostly of a qualitative nature, meant to illustrate the potential of the two climatic parameters considered – global mean temperature rises, and ENSO activities – to counteract each other over the next thirty years. Yet before we come to draw any conclusions, let us consider an analytic tool other than regression, namely spectral Fourier time series analysis.

6.4. Fourier Trend Projections

F-BaU Projection. With only 26 data points, our disaster figure time-series lies on the very edge of the applicability of a spectral time series analysis, which is why the spectra revealed contain rather large error margins. Figure 13a depicts the power spectrum of the disaster data (as well as that of the SOI time series of Box 13). It shows a dominant low-frequency spike in the disaster series power-spectrum

generating a ('long-term-') quasi periodic cycle with a period of between 30 and 60 years. The data cycle reaches its nadir in 1976 (at 2%) and its apex in 1994 (at 3.7%). Unfortunately, the time series is too short to reveal anything about either a central trend or an amplitude growth trend in the oscillation which is why we can only extrapolate this long-term trend cycle as a simple static 36-year sine-wave.[112] Consequently, the '*F-BaU* projection' of the figure for 2030 (=1994+36) is simply its apex value of 3.7%.

(a) *Fourier Power Spectra*



Source: B. Buck

(b) *The 'Fourier BaU Projection'*

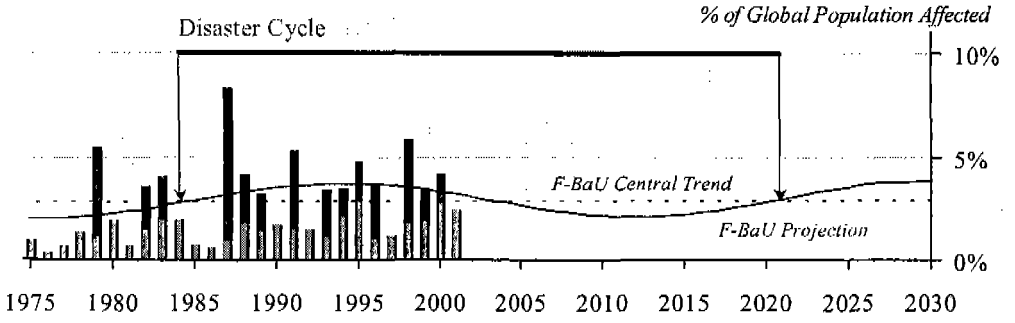


Figure 13: The 'Fourier Long-term Disaster Trend Cycle' and *BaU* Projection

F-BaU (TC) Projection. The non-linearity of this Fourier BaU trend line prohibits a straightforward application of our temperature-impact-forcing methodology to try and account for a possible temperature-change dominance in light of the predicted increments in global mean temperature during the coming three decades (Figure 8). It might be possible to adapt the *tif*-method to deal with non-linear trend-lines, but given its rather coarse nature, this may not be worth the effort. Instead, one might simply apply the methodology to the central trend of the oscillation – i.e. the curve described

[112] The fact that the most likely period (41.8 years) is somewhat longer than the one of this chosen regular extrapolation is not a particular problem given the projection will be used in a largely qualitative manner.

by its centre – assuming that it is itself linear. As concerns our *F-BaU* projection, this last condition is certainly satisfied: its central trend is indubitably linear. But since it is also constant – i.e. zero-growth throughout – there is no temperature-impact (whatever the chosen *tif*-coefficient). In other words, the *F-BaU* (*TC*) projection is exactly the same as its *F-BaU* basis. The problem with this concurrence is, of course, that it is not based on any empirical estimates but given by an inevitable arbitrary choice forced on us by our lack of information about a possible underlying central trend of the oscillation.

In order to draw any reasonable conclusions about such a central trend, one needs at least a full period of data, but we are still at least 10 years short. Indeed, given the rather large error margin for the period of our long-term trend cycle, chances are that by the time we could be in possession of such a data series, there would be no need for a 2030 *projection* anymore, all we would need to do is record. Given these limitations regarding its central trend, the *F-BaU* projection is probably not a good substitute for our earlier linear model of the TC- ('temperature-change-') dominance scenario.

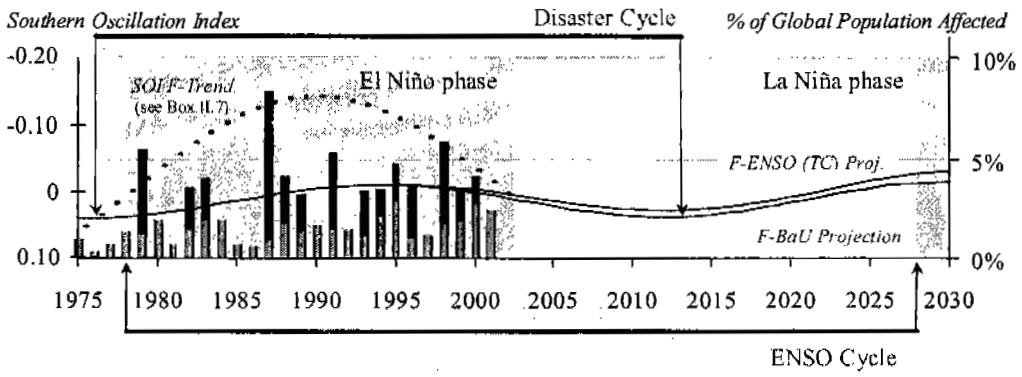


Figure 14: The Fourier *ENSO* (*TC*) Projections

F-ENSO (*TC*) *Projection.* Given our (albeit still uncertain) spectral information about the quasi periodicity of the Southern Oscillation data, chances are that, by contrast, our *F-BaU* projection would make for a better model of what was referred to as the 'ENSO dominance scenario'. As indicated in Figure 14, the 'long-term Fourier trend' of the Southern Oscillation Index[113] and the long-term disaster trend line (*F-BaU*) are sufficiently well correlated – particularly given the considerable error-margins[114] – to support the ENSO-dominance hypothesis. Indeed, in light of our *a priori* choice of zero central trend growth for the *F-BaU* disaster data projection, this projection suggests itself as a candidate for modelling this scenario (under BaU mean-temperature conditions).

Allowing thus for some growth in ENSO activity due to the projected increase in global mean temperature over the next three decades by adding on 20 percent of the

[113] N.B. The low-frequency spike revealed in our power-spectrum which we used to construct this 'long-term Fourier trend' may actually be a probabilistic artefact ('noise'). Indeed, a split-data analysis reveals it only in the latter half of the time series, which would make it a rather recent (anthropogenic?) trend, if it really does exist. If not, at least no harm is done to our climatic sensitivity analysis of our linear BaU projection, for in that case, we simply cannot say anything at all about long-term ENSO tendencies.

[114] The fact that the disaster trend *F-BaU* begins two years before the SOI trend cycle is well within these error-margins to contradict the ENSO-dominance hypothesis.

current level – in analogy to the *L-ENSO* (*TC*) projection (see Figure 11) – generates a long-term Fourier 2030 trend projection of about 4.5%, as opposed to its linear *L-ENSO* (*TC*) counterpart estimate of 2.6%. It thus stands to reason that our simple linear model of ENSO impacts may have been somewhat over-optimistic.

Modifying our purely linear 50–50 Projection (Figure 12c) by replacing its linear ENSO component (Figure 12a) with half of the *F-ENSO* (*TC*) 2030 projection, we find our best-guess regression projection *L-BaU* for 2030 to be on the very conservative edge of the 2030 range of values predicted under this modified mixed causality model (Fig. 15). The fact that this happens to be true for any *tif*-coefficient $\rho \geq 0.2$ ('five-to-one forcing') provides additional validation for our 'best-guess' *L-BaU* projection, even in the face of variations in climatic determinants that, on the face of it, would invalidate its *ceteris paribus* conditions.

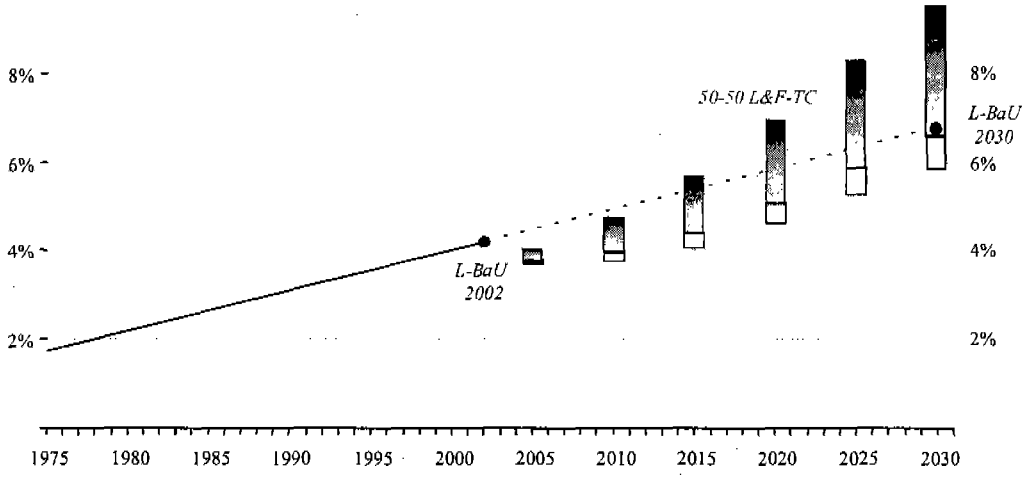


Figure 15: Mixed Causalities: The *50-50* Linear/Fourier *TC* Projection

6.5. Why Disaster Relief Measures? Conclusions from Projections

Faced with a lack of sufficiently accurate 'causal' models – concerned with the interaction of the underlying causal determinants – on the one hand, and of sufficiently rich data series to generate stringent statistical analyses, on the other, one could decide to put all one's efforts into developing more accurate models while hoping that by the time they are finished, sufficient years will have elapsed for them to be meaningfully tested against the richer prolonged data series. Acknowledging the need for further such studies, the present analysis – with all its inevitable shortcomings – indicates that policy choices will likely have to be made well before we are in possession of such refined analytic tools; keeping in mind that refusing to take a decision – i.e. to remain with the *status quo* – is also a policy choice which future generations may hold us accountable for.

Summary of Projections.[115] Over the past three decades, the proportion of the global population affected by weather-related disasters has doubled in linear trend rising from roughly 2% in 1975 to 4% in 2001. In absolute numbers, these trend figures have almost quadrupled over this period, rising from 70 to 250 million people. Under 'Business-as-Usual' (BaU) conditions, this trend is highly likely to continue over the next three decades.

[115] Estimates are rounded to full percentage points and tens of millions.

- The BaU trend projection generates with 95%-confidence an estimate for 2030 of between 6% and 8% of global population. Given some recent population projections, this means that we can with very high confidence project the BaU *trend* of the number of people affected by weather-related disasters – the most likely expected number – for 2030 to lie between 460 and 630 million, roughly double its present value.
- The BaU projection also suggests that the 2030 proportion of people affected globally will with 95%-confidence be between 3% and 11%. In absolute figures we can thus be very confident that – under BaU conditions – the number of people affected by weather-related disasters in 2030 would be somewhere between 220 and 860 million in the worst case, i.e. twice the worst recorded figure (417m in 1987) in the past three decades.

Choice of Model. Linear regression, the analytic model chosen to carry out these BaU projections and the projections themselves were subjected to a number of different robustness tests. Having little or no information other than that contained in a series of figures reflecting past measurements of the parameter under consideration, the only applicable analytic method is time series analysis. The models considered for the purposes of this analysis were based on a (spectral) Fourier analysis, on the one hand, and on several regression types, on the other. The Fourier analysis turned out to be useful in modelling certain variations from the BaU conditions, but it was unable – due to insufficient data – to generate a plausible projection. The choice between the different regression models, in turn, was guided by two factors: their closeness of fit with the data, and the relative conservativeness of their projections. The linear regression model chosen on these grounds also had the advantage of a well-established and readily available set of associated statistical tools which revealed the trend projections to be statistically well-behaved (i.e. relatively small error margins).

Sensitivity to Data Reliability. Time-series analyses, by their very nature, depend on the reliability of the input data, particularly if used for projecting over longer periods of time. Sensitivity analysis has shown the chosen linear regression projection to be sufficiently robust to deal with likely errors in the collection and recording of input data.

Potential Climatic Variations from BaU. Time-series analyses – again by their very nature – can only be used for projections under BaU conditions. The accuracy of any projection based on extrapolating the result of a time-series analysis is conditional on the assumption that the underlying determinants of the data continue to behave as they did when generating the data. This makes such projections vulnerable to the possibility of some key determinants actually veering off this BaU path. Two such possibilities were considered, namely an increased growth in global mean temperature and a 'phase change' in a possible long-term trend of the El Niño/Southern Oscillation phenomenon. Based on predictions about the behaviour of these climatic parameters during the next thirty years it was argued that the figures projected by the linear regression technique would remain on the conservative side even under these expected climatic variations from BaU conditions.

Impact Management. No doubt, the methods of time-series analysis used to estimate the human impacts of weather-related disasters are less reliable than what could be obtained by 'causal' models. At the same time, it would show a curious bias if we were to reject time-series results in this context for reasons of insufficient certainty,

given that we are quite happy to rely on them time and again in making major economic decisions.

Assuming that the projected numbers of people expected to be affected by weather-related disasters are unacceptable, there is only one way in which to react, namely to try and influence the policy-sensitive socio-economic determinants of these disaster figures. In other words, the only way to reduce the projected figures is to veer off the socio-economic BaU path by engaging in impact management over and above its currently practised level.

Impact Reduction Measures. The key point to remember is that *emission* mitigation has already become ineffective as a means of reducing the impact figures projected for 2030. As far as the natural ENSO effects are concerned, it was never an option, and for the temperature-related impacts, it has unfortunately already ceased to be one. (*N.B.* this is *not* an excuse for failing to pursue much more aggressive emission mitigation efforts even now, if one is interested in what happens to humanity after 2030!) The only impact reduction measures which have a chance at all to mitigate the number of people affected by weather-related disasters over the time horizon in question are measures directed at reducing the vulnerability of the threatened societies and individuals.

Impact Response Measures. There can be little doubt that it is generally better to try to prevent a disaster than having to try to fix the damage incurred. However, in light of the projected magnitude of the problem, and the fact that – regardless of increased international efforts in promoting disaster reduction – there seems to have been an increasing trend in the size and number of disasters, particularly in the 1990s, it would not be prudent to continue the FCCC practice so far of putting all one's eggs in the impact reduction basket. One may place one's hope in being able to reduce the number of potential disaster victims by way of vulnerability reduction measures, but one also needs to prepare the response regime to be able to cope with disasters of at least the expected trend magnitude. The remaining two chapters of this study will accordingly be looking in some detail at the current international disaster relief system and at some suggestions for improvements.

Key Conclusions. There are two key conclusions to be drawn here, namely

- Climate change is a near-term problem, leading to inevitable inequities.
- There is an urgent need for an improved impact response system.

Climate Change a Near-term Problem. This has been admirably summarised by the Chairman of the House of Commons' International Development Committee on the occasion of the publication of its report *Global Climate Change and Sustainable Development*[116] when he stated that

> Everything that we have seen during this inquiry has reinforced for us the fact that climate change is here, is happening now, can only get more pronounced and must be addressed urgently. It's not only about reducing the levels of greenhouse gases but about adapting to changes that are happening now and will go on happening. It's adaptation that the developing countries care about and it's that need that DFID [UK Department for International Development] and other donors should be getting behind and supporting. Without action to address climate change now hundreds of millions of people will be additionally at risk of hunger, water shortage, flooding or malaria.

[116] Third Report, Session 2001 – 02, HC 519, Vol. I; www.parliament.uk/commons/selcom/indhome.htm

This means, in particular, that the cardinal inequity in the context of climate change is not the *potentially* unfair allocation of mitigation targets but the *inevitably* unfair distribution of climate impact burdens.

Improving Impact Response. Conscious of the fact that the models employed in these scenario analyses are inescapably rather crude first-order proxies for what is really needed to do justice to an extremely complex and highly non-linear problem, the problem potential thus revealed – albeit by these first-order approximations – is of a magnitude which would render a continuation of the past and present treatment of impact response measures in the climate change regime not just a matter of neglect but of sheer negligence.

6.6. What's Justice got to do with it?

In light of the overall theme of this study we cannot leave this discussion of weather-related human disaster impacts without at least mentioning one of the key distributive issues: their regional differentiation. Figure 16 represents the numbers of people affected by weather-related disasters during the 1990s (extracted from the *World Disaster Report 2001*:184). The figure makes it clear (Fig. 16b) that the distribution of these impacts between the regions has been extremely uneven over the period. Of all the people who were affected during the last decade, 90 percent lived in Asia. Given our earlier discussion of the EMDAT data, this may not be as surprising as it otherwise could have been since all 'large disasters' over the last three decades have occurred in this region. But why should that be unfair? After all, is not Asia the most populous of the regions mentioned? As it happens, Asia has been home to the

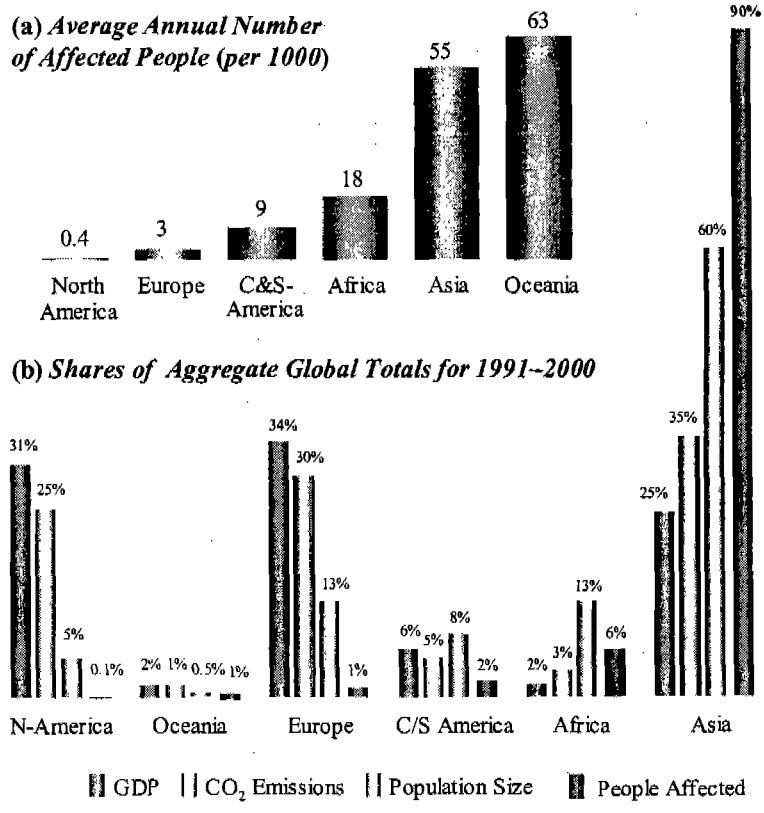


Figure 16: Weather-related Disasters in the 1990s. Regional Differentiation of Impacts

majority of people during the period, but with 60 percent of the total, its aggregate population[117] still fell significantly short of its 90 percent portion of the misery. But it is not clear whether proportionality to population size would be an appropriate yardstick for the fairness of impact distributions.

A Probabilistic Turn. The number of people affected per population unit (say per 1000 inhabitants) is both a measure of this proportionality, and a rough indicator of the chance of being affected by weather-related disasters in the different regions. Over the past decade, at least, this fraction has varied considerably across the regions (Fig. 16a), ranging from 0.4 (North America) and 3 (Europe) at the lower end, to 55 (Asia) and 63 (Oceania) at the other extreme.[118] In attempting to argue that proportionality to population size is justifiable as a fairness indicator for impact distributions, one might thus try and take a 'probabilistic turn' in arguing for the equivalent probabilistic position that differentiations in these chances – such as the one just described (Fig. 16a) – are (morally) objectionable.

However, there is nothing in the character of chances *per se* that would make it self-evident why they should or should not be differentiated. People often cherish the legitimate freedom to be able to take chances, to choose the level of risk they wish to be exposed to. And it is difficult to see how such voluntary choices should involve matters of distributive justice (assuming they do not have detrimental effects on others). In short, the suggested probabilistic turn fails to provide the sought justification. However, by referring to 'voluntary choices,' it does indicate a way forward, for the situation changes markedly if we consider chances and risks which are *imposed,* in particular if the imposition is unjust.[119]

Impositions. In those cases where it is, at least in principle, possible to hold someone responsible for the imposition,[120] the key question becomes: who and to what degree. The reason for this lies in a Responsibility Principle – often referred to as the 'Polluter Pays Principle' – which says that burdens for remedial and compensatory actions are to be shared by those responsible and in accordance with the degree of responsibility for the problem. Given that an imposition of adverse climatic impacts can hardly be interpreted as 'just punishment,' imposed impacts – be they actual or potential – do indeed pose a problem of distributive justice, but it is not about how they themselves happen to be distributed, but about the distribution of the burden to deal with them.

The discussion so far has thus revealed two important points, namely:

- There is no 'fair' proportion of imposed adverse climatic impacts, they are *all* unfair whatever their sizes and relative proportions. There is only a fair level of sharing the burden in dealing with them. And the key equity problem is our

[117] That is to say, in the sum total of the yearly population figures for 1991 to 2000.

[118] Note that these figures can be deceptive with regard to potential intra-regional differences. For example, considering just small island developing states (SIDS) in the Oceania region, the figure rises to a staggering 306 people per 1000 inhabitants (i.e. a third of the population). And the same is likely to be true for the Caribbean SIDS.

[119] There can be impositions of negative effects which are deemed to be 'just' in the sense of 'just punishment.'

[120] Something can be imposed on someone without there being anyone who could be held responsible. The chance of being hit by a meteorite may be a case in point. And there can be special cases where a differentiated improvement of such impositions would not seem to be morally acceptable, such as a differential improvement of the exposure to meteorites through a selective employment of a 'Star Wars' type defence system.

ignorance of what it means to 'share impact burdens' in their multifarious guises, let alone to 'share them equitably'.

- The impacts to be considered in this way are not just actual but also potential (as reflected in the chances/risks referred to). In the first case, the burden to be shared equitably is that of carrying out impact response measures, in the second that of impact reduction measures.

The 'A-World'-Example. Returning to our weather-related disaster impact figures, the question is not just *who* is responsible (to what degree), but *for what exactly*, as it will be felt that the analysis put forward can only apply to anthropogenic impacts. Consider the following hypothetical 'Attribution (*A*-) World' – based on the numbers represented in Fig. 16 – where climate change attribution *is* possible. The 'North' (i.e. the industrialised world) is divided into two groupings, namely the 'Europe' region on the one hand, and the aggregate of the 'North America' and the 'Oceania' ones (NAMOC), on the other, and the 'currency' of the example is percentage points (%) of the global totals.[121] The remaining regions (Africa, Asia, South and Central America) are, for these illustrative purposes, taken to represent the developing world and collectively referred to as the 'South.'

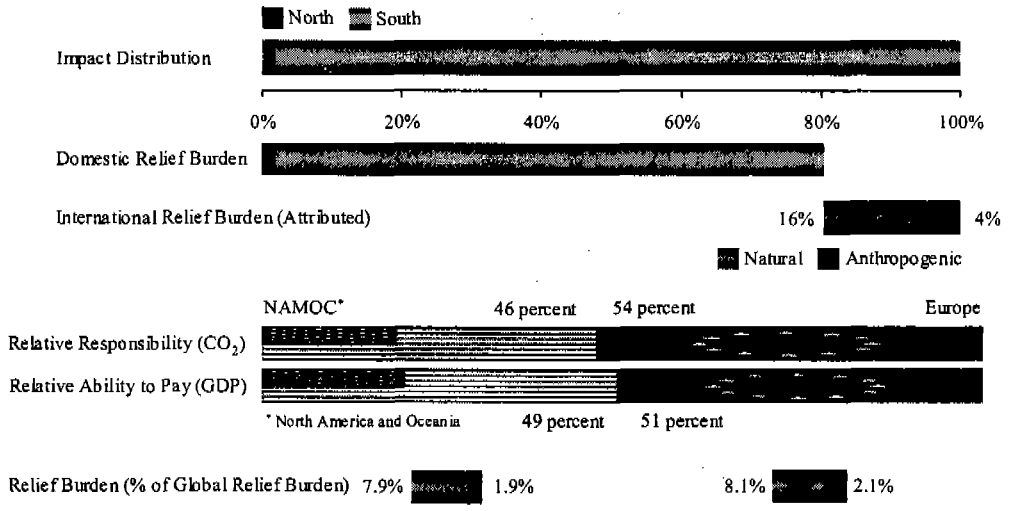


Figure 17: The Attribution Non-Issue for International Impact Disaster Relief

As illustrated in Fig. 17, the North bears 4% of the global impact (people affected by weather-related disasters), while the South is lumbered with the remaining 96%. Historically, most of the disaster relief efforts have been undertaken by the domestic agencies of the affected countries. Indeed, international relief is only meant to be forthcoming in those cases where domestic capacity no longer manages to cope with the problem. It can thus safely be assumed for our illustrative purposes that 80% of the global impacts are dealt with domestically (including all of the Northern ones). Given that in this *A-World* we are meant to be able to distinguish whether impacts are 'natural' or 'anthropogenic,' let us furthermore assume that of the remaining 20% dealt with internationally, 16% were natural and 4% anthropogenic impacts.[122]

[121] Relative percentage figures are, by contrast, denoted by 'percent'.

[122] For simplicity's sake the 'currency' for the burden is simply identified with that of the impacts, namely % of globally affected people.

North–South Equity. Who ought to carry this international burden? Given that all the impacts which are internationally dealt with are of Southern provenance because of the South's insufficient domestic capacity to deal with them, it would seem not only reasonable but fair that the burden for these international efforts should be carried by the North. Some Northern commentators in this hypothetical world might well object to this on grounds that having to carry the South's proportion of the anthropogenic component of this international burden would be unfair to the North. However, this might be a dual-edged argument, for their Southern counterparts could on the same grounds argue that it is unfair that they should have to pay for the Northern anthropogenic component in their domestic efforts. Indeed, keeping to our general *A-World* attribution formula of 80 percent natural to 20 percent anthropogenic, we find 19% of the South's 75% domestic burden to be anthropogenic, which – when shared in proportion to responsibilities[123] – means in this hypothetical example that 17 percent[124] of the South's domestic burden should rightfully have been borne by the North.

This is indeed a paradigm example of the real Southern equity concern about having to bear a disproportionate share of the impact burden. While at present it may be difficult to address this concern without some further progress on the attribution issue, it would be wrong to believe that it will not have to be addressed at some stage, whether the attribution problem is solved or not. And it should be kept in mind by the afore-mentioned Northern commentators, whether in our hypothetical example or in the real world, that their complaint is likely to pale into insignificance relative to the inequity meted out on the South.[125]

North–North Equity. How should the attributed international burden be shared among the Northern regions? According to our Responsibility Principle, the 4% anthropogenic burden ought to be divided according to the relative responsibility which – when measured in terms of the CO_2-emissions (Fig. 16)[126] – means 46 percent (i.e. 1.9%) for the NAMOC region and 54 percent (2.1%) for Europe. The remaining 16% 'natural' international burden, in turn, ought to be shared in accordance with a Solidarity Principle linking the burden to be carried with ability to pay, which – when operationalised in terms of the regions' gross domestic product (GDP) – entails 7.5% (49 percent) to be borne by NAMOC and 8.1% (51 percent) by Europe. Accordingly, the fair over-all distribution of the 20% international burden would be 48 percent for NAMOC and 52 percent for Europe.

The Attribution Non-Issue. Given the close similarity between the distributions of the two equity parameters – 'Relative Responsibility,' and 'Relative Ability to Pay' (Fig.17) – this over-all result is hardly surprising. Indeed, it could have been predicted with reasonable accuracy without knowing the attribution percentages. And this is precisely why attribution becomes a non-issue in this context. As long as the

[123] The North:South ratio of the CO_2 emission figures (Fig.II.11) is 67 percent to 33 percent. Note that this is quite a conservative operationalisation of 'responsibility.' There have been other proposals (notably one put forward by Brazil) under which the proportion of Northern responsibility becomes even greater.

[124] 13%, i.e. more than three times the North's own domestic burden of 4%.

[125] As depicted in Fig. 16, the South (Africa, Asia, Central and South America) is responsible for 33 percent of CO_2 emissions, which means that, according to a strict application of the Responsibility Principle, it would have to bear 1.3% of the total 4% anthropogenic international burden, exactly ten times less than the burden of the North it carries domestically.

[126] Note that all of them are post-1990 which means that they could be regarded as implying culpable liability.

parameters operationalising Relative Responsibility and Relative Ability to Pay are more or less proportional (as they actually still are), and as long as the developed more affluent world remains willing to supplement the relief for 'natural' weather-related disasters which are beyond the national capacity to cope – as long as this is the case there will be no attribution problem in the context of financing international disaster relief.

- The real equity issue for the Northern donor community in the context of weather-related international disaster relief is not whether due to an inability of attribution, they are asked to carry more than their fair share, it is whether they manage to divide this share equitably amongst themselves, i.e. whether they manage to get everyone to 'pull their fair weight'.

The extent to which the individual industrialised donors actually do pull their (fair) weight is an issue which we shall now turn to in our discussion of the 'Supply-side Picture' of international (weather-related) disaster relief.

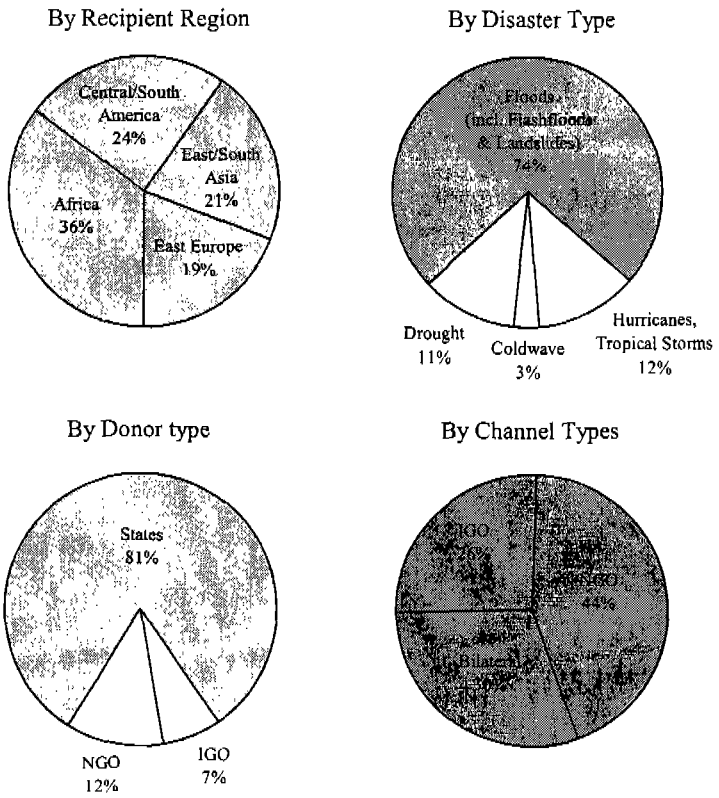
7. International Weather-related Disaster Relief: The 'Supply-side Picture'

7.1 International Donor Statistics

The 'Supply' in 2001. For the year 2001, the UN *Financial Tracking System*[127] – maintained by the UN Office for the Coordination of Humanitarian Affairs – recorded 49 international natural disaster[128] emergency relief operations, most of which (41) were weather-related ('hydro-meteorological,'), such as floods, droughts, and tropical storms. Apart from some occurrences in economies in transition, these weather-related disasters largely struck the developing world (Box 14). The emergency response costs for them to the international community was in the region of $100 million,[129] less than half of the international expenditure for geophysical disasters (volcanic eruptions, earthquakes: $214m), itself dwarfed by the humanitarian costs of $1460 million raised by the international community in reply to Consolidated Inter-Agency Appeals[130] for complex emergencies.[131]

As illustrated in the pie-charts of Box 14, the international weather-related disaster

Box 14: 2001 Shares of Total International Donations on Weather-related Natural Disasters



Source: OCHA FTS

[127] http://www.reliefweb.int/fts/

[128] Note that the term 'disaster' here is different from the EM-DAT definition, in that it is restricted to events which went beyond national disaster relief capacities.

[129] The figure of $98m given in the FTS compilation does not include in-kind contributions or services which were not costed.

[130] See Section 7.2

relief donations were fairly evenly distributed between the afflicted regions. However, around three-quarters of the money was spent on hydrological disasters which were also the most frequently occurring (27 out of 41).

Donors. The vast majority (81%) of donations were made by governments,[132] followed by Non-Governmental- (NGO 12%), and Inter-Governmental Organisation (IGO 7%). Three-quarters of all government donations were from EU governments, followed by Norway (5%), Canada and Japan (4%), and Switzerland and the United States (3%).

Bilateral Donor Effort. The fact that Switzerland and the United States have both contributed almost exactly the same amount ($2.2m) shows that the effort of a country in relieving these disasters cannot meaningfully be compared in these absolute terms. Indeed, the ranking between these countries does change considerably if measured relative to their GDP. The American donation equals 0.00002% of US 2001 GDP. At 0.00007% of GDP, Japan's relief effort is therefore 3.5 times greater, followed – in order of increasing strength – by that of Canada (19×), EU (35×), Switzerland (41×), and finally Norway with a relief effort 119 times greater than that of the US.

NGO Donors. Even though the field of NGO donors comprised a dozen or more organisations, it was clearly dominated by the Red Cross/Red Crescent (RC) movement which contributed 93 percent of the listed NGO donations.

Channels. Almost 40 percent of government donations were administered bilaterally. The rest of the donations were two-thirds channelled through NGOs and one third through IGOs. 55 percent of the donations channelled through NGOs were administered by the Red Cross/Red Crescent (RC) movement (30 percent through the IFRC and the rest through the national RC societies), the 'rest of the field' managing an average of merely 0.6 percent. The IGO channels were less concentrated with 4 IGOs sharing two-thirds of the IGO channelled donations between them, namely World Food Programme WFP (33%), UNICEF (18%), UN Office for the Coordination of Humanitarian Affairs OCHA (17%), and UNDP (15%). Of the 443 costed transactions for weather-related disasters listed in the UN FTS, the most

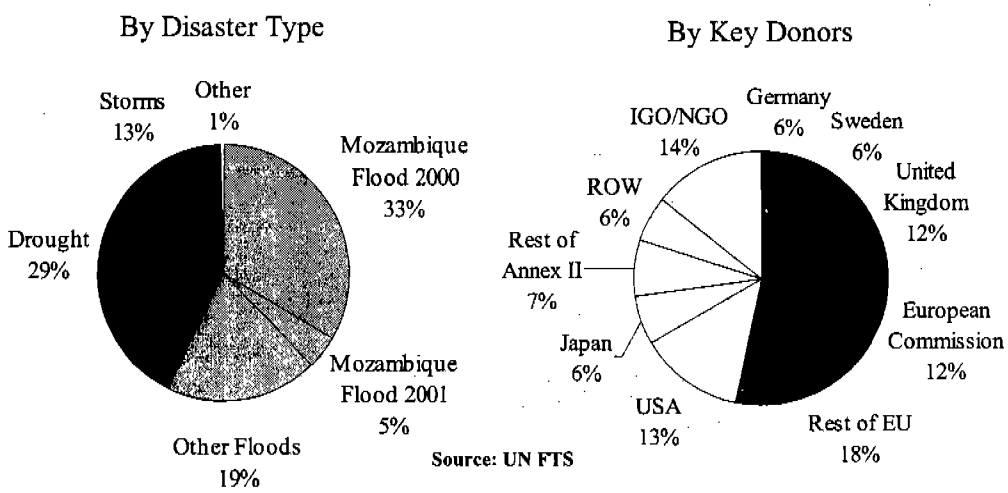


Figure 18: Donations for Weather-related Disaster Relief. Shares in 2000–01 Total.

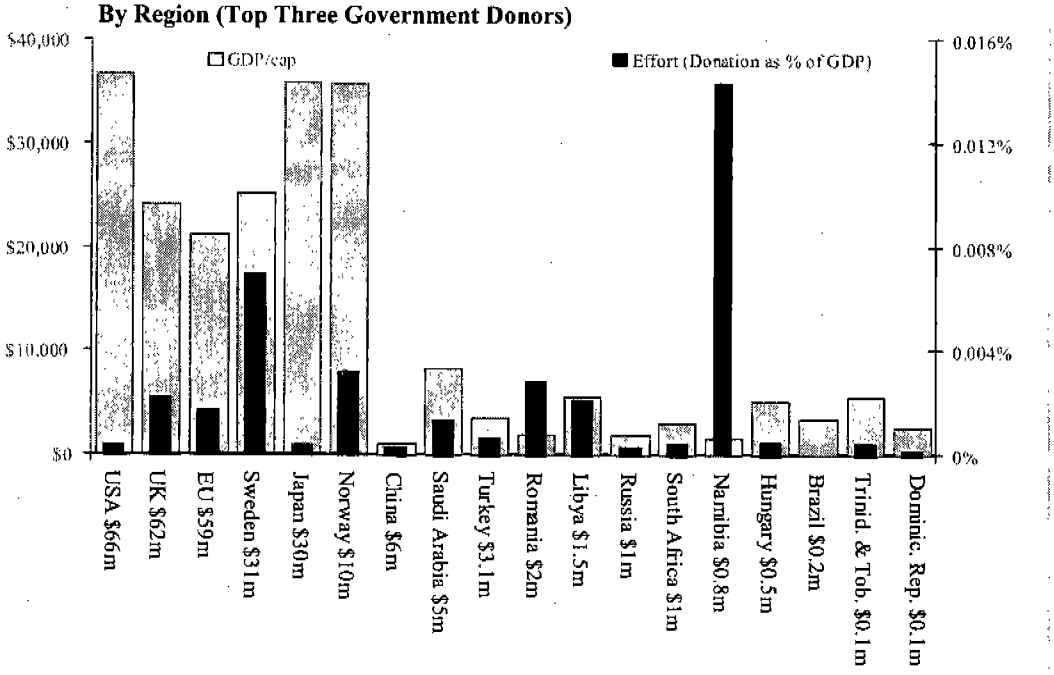
[131] See Box 10, Chapter 6.
[132] The European Commission is counted as an EU government for the present purpose.

frequently used channel was the RC (93 transactions), followed by OCHA (64) and UNICEF with WFP as joint third (22).

The Two-year Picture: 2000–01. This 2001 disaster relief 'supply snapshot' – while representing the most recent state of affairs – is obviously not necessarily representative of what has happened in the past. Unfortunately, the data available from UN Financial Tracking System only cover the last two years, so the best one can do is to consider the data for the combined two-year period as 'typical'. During the period, the total number of people affected was 406m and the total amount of money donated for international weather-relater disaster relief was $495m, which immediately indicates that 2001 – with 151m people (Fig. 5a) and $98m – was significantly less affected by weather-related disasters than the preceding year (255m, $397m).

Apart from these differences in over-all magnitudes, the 2001 picture is close to being 'typical' in a number of respects: bilateral donations, for one, retain their lion's share of the donations (86 percent) over this two-year period, and the EU member countries continue to pay more than two-thirds of the industrialised country ('Annex II') contributions, followed by the United States with 16 percent, and Japan with 8

Box 15: Donations for Weather-related Disaster Relief 2000–01. By Region (Top Three Government Donors)



Rank		GDP/cap.	Effort	Rank		GDP/cap.	Effort
1	Namibia $0.8m	$1.5k	0.0143%	10	Hungary $0.5m	$5.1k	0.0005%
2	Sweden $31m	$25.2k	0.0070%	11	South Africa $1m	$2.8k	0.0004%
3	Norway $10m	$35.7k	0.0031%	12	Trinidad & Tobago $0.1m	$5.6k	0.0004%
4	Romania $2m	$1.8k	0.0028%	13	Japan $30m	$35.8k	0.0003%
5	UK $62m	$24.1k	0.0022%	14	USA $66m	$36.7k	0.0003%
6	Libya $1.5m	$5.5k	0.0021%	15	Russia $1m	$1.8k	0.0003%
7	EU $59m	$21.3k	0.0016%	16	China $6m	$0.9k	0.0003%
8	Saudi Arabia $5m	$8.2k	0.0013%	17	Dominican Rep. $0.1m	$2.4k	0.0001%
9	Turkey $3.1m	$3.4k	0.0007%	18	Brazil $0.2m	$3.4k	0.0000%

percent. And, as illustrated in Box 15, the two-year pattern of bilateral donor 'efforts' (i.e. donations per GDP) is similar to the one displayed in our 2001 picture. While it would be unreasonable to expect Namibia's extraordinary effort over the period to reflect a typical trend, it seems plausible that the pattern of differentiated relative effort between Annex II countries exhibited (in red) in Box 15 does reflect longer term donor behaviour. In fairness, it must be pointed out that over the whole period, the US put considerably more 'effort' into weather-related natural disaster relief than in 2001. Indeed, over the two-year period, its effort was level with that of Japan (as well as that of Russia and China) at 0.0003% of GDP. However, as the material in Box 15 also indicates, it would be difficult to argue that this constitutes 'pulling their fair weight' (see Section 6.6) given their ability-to-pay within the group of the worlds most affluent countries (say, as listed in Annex II of the UN Framework Convention on Climate Change).

If there was one event which was 'untypical,' it was one which actually happened in the year 2000, namely the Mozambique flood of 2000 which absorbed significantly more donations ($166m) than any other single event during the period, indeed significantly more than the whole of the recorded costed donation for 2001 ($98m). Excluding the Mozambique 2000 related figures – which we shall return to in Section 7.3 – the 'typical' shares in donations for different disaster types were relatively even, ranging from 44 percent (droughts), 36 percent (floods) to 20 percent (storms).

7.2 Existing Organisations, Instruments and Initiatives

The existing regime for international emergency disaster relief is carried by a variety of actors, ranging from governments to inter-governmental (IGOs) and non-governmental organisations (NGOs). As concerns the envisaged FCCC International Disaster Response Instrument, three of these actors are of particular interest and importance (Fig. 19): The UN *Inter-Agency Standing Committee* (IASC) and the *Office for the Coordination of Humanitarian Affairs* (OCHA), on the IGO side, and the *Red Cross/Red Crescent (RC) Movement* with its International Federation (IFRC), on the side of the NGOs.

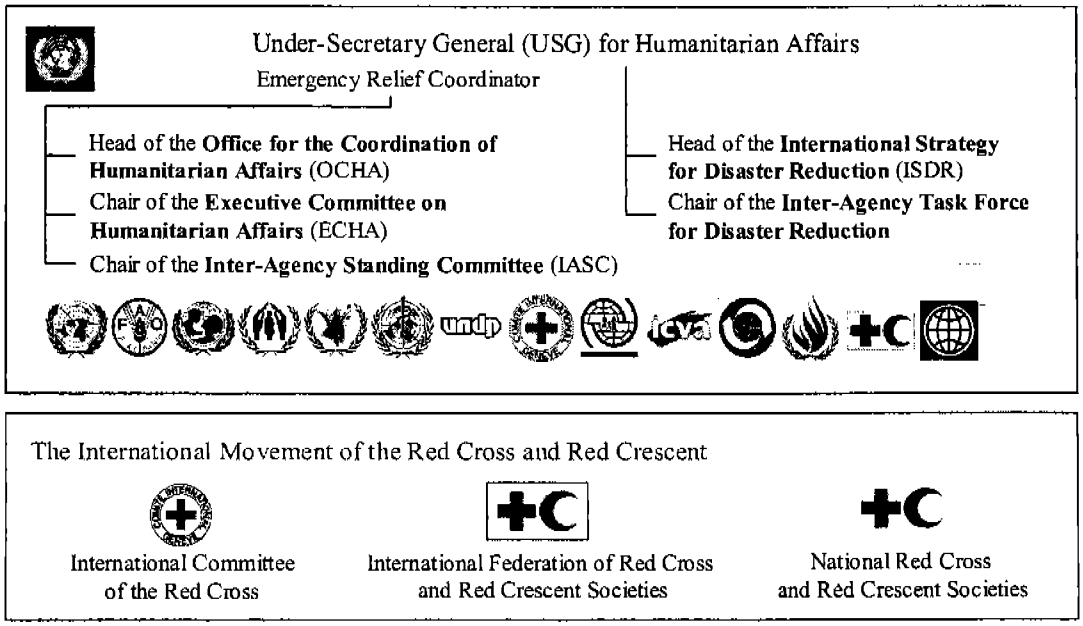


Figure 19: Key International Disaster Relief Institutions

Inter-Agency Standing Committee (IASC)

The year 1992 not only saw the adoption of the UN Framework Convention on Climate Change, but also the creation of the Inter-Agency Standing Committee (IASC) in response to UN General Assembly Resolution 46/182 (December 91) 'to serve as the primary mechanism for inter-agency coordination relating to humanitarian assistance in response to complex and major emergencies'.[133] The primary objectives of the IASC include:[134] the development of system-wide humanitarian policies; the allocation of responsibilities among agencies in humanitarian programmes; the development of a common ethical framework for all humanitarian activities; the identification of areas where gaps in mandates or lack of operational capacity exist. Its participants include: The Office of the United Nations High Commissioner for Refugees (UNHCR); The World Food Programme (WFP); The United Nations Children's Fund (UNICEF); The United Nations Development Programme (UNDP); The Food and Agriculture Organization of the United Nations (FAO); The World Health Organization (WHO); The Office of the United Nations High Commissioner for Human Rights (UNHCHR); The International Organization for Migration (IOM); The International Committee of the Red Cross (ICRC); The International Federation of Red Cross and Red Crescent Societies (IFRCS); The Secretary-General's Representative on Internally Displaced Persons; Three international NGO consortia: InterAction, the International Council of Voluntary Agencies, and the Steering Committee for Humanitarian Response.

The IASC is chaired by the UN Emergency Relief Coordinator (ERC), who also chairs the Executive Committee on Humanitarian Affairs (ECHA), combining these functions with that of UN Under-Secretary-General (USG) for Humanitarian Affairs, as well as that of head of the UN Office for the Coordination of Humanitarian Affairs.

UN Office for the Coordination of Humanitarian Affairs (OCHA)

The same General Assembly Resolution which gave rise to the formation of the IASC also led to the creation of a Department of Humanitarian Affairs – since 1998 known as 'Office for the Coordination of Humanitarian Affairs' (OCHA) – as part of the UN Secretariat. OCHA's mandate is to coordinate UN assistance in humanitarian crises that go beyond the capacity and mandate of any single humanitarian agency. OCHA is divided into five branches, three based in New York City and two in Geneva:

- Advocacy, External Relations and Information Management Branch
- Policy Development and Studies Branch
- Humanitarian Emergency Branch (HEB)
- Response Coordination Branch (RCB)
- Emergency Services Branch (ESB)

Of the last three (operational) branches, the New York based Humanitarian Emergency Branch serves as the principal advisor to the OCHA head in his dealings as Under-Secretary-General and Emergency Relief Coordinator with the Executive Office of the Secretary-General, and interacts with the political, peacekeeping and security arms of the Secretariat, UN Agencies and NGOs on all humanitarian issues.

[133] IASC (1998) *Concise Terms of Reference & Action Procedures,* <http://www.reliefweb.int/iasc/Website/Background/IASC.TOR.doc>
[134] See IASC (1998).

The operational dealings with natural disasters are primarily based in Geneva (Fig. 20)

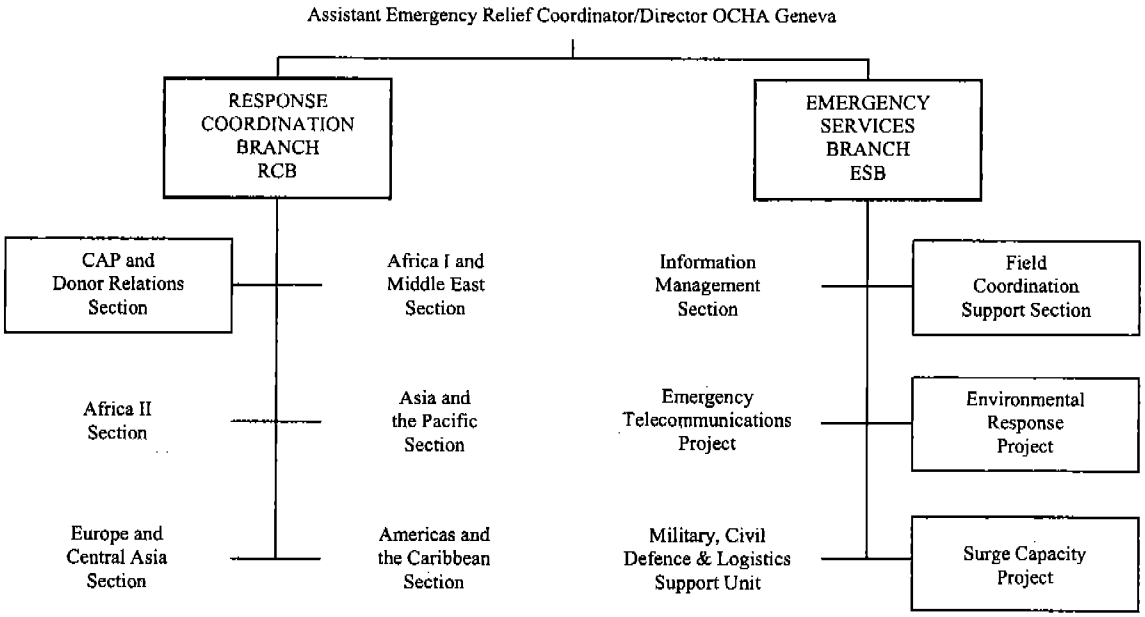


Figure 20: OCHA Geneva. Operational Branches

Emergency Services Branch (*ESB*). The objective of the Emergency Services Branch is to develop OCHA's capacity to provide emergency services aimed at expediting the provision of international humanitarian assistance in disasters and emergencies. Within the overall mandate of OCHA, the Branch develops, mobilises, and coordinates the deployment of international/bilateral rapid response and management capacities, covering the entire range of disasters and emergencies.[135] Three of the sections/projects of the ESB are of particular interest in the present context

- *Field Coordination Support Section* (*FCSS*).[136] OCHA manages the United Nations Disaster Assessment and Coordination (UNDAC) system in which 47 governments and five international organisations provide emergency managers at 12–24 hours notice to respond to sudden-onset emergencies.[137]
- *OCHA/UNEP Environmental Response Project.*[138] OCHA brings together the environmental expertise of United Nations Environment Programme (UNEP) and its own disaster management experience to serve as the integrated UN emergency response mechanism to activate and provide international assistance to countries facing environmental emergencies. The project provides integrated environmental-humanitarian assistance to countries affected by environmental disasters – including forest fires and other sudden-onset emergencies – and natural disasters that cause or threaten environmental damage leading to potentially serious health and environmental implications.

[135] UN OCHA (2002), *OCHA in 2002: Activities and Extrabudgetary Funding Requirements,* <http://www.reliefweb.int/appeals/ocha2002.html>:23.
[136] http://www.reliefweb.int/undac/fcsu/index.html
[137] OCHA 2002:23.
[138] OCHA 2002:24.

- *Surge Capacity Project.*[139] OCHA also manages the Surge Capacity Project for rapid fielding of personnel specialised in coordination and information management.

Response Coordination Branch (*RCB*). The RCB in Geneva has a leading role in mobilising and coordinating international emergency assistance following complex emergencies and natural disasters. The Branch is responsible for issuing updates on humanitarian situations and providing support to OCHA field offices. It acts as an information conduit between branches of OCHA and partners in the humanitarian community. The Branch, in cooperation with HEB, undertakes assessment missions and, through its Consolidated Appeals Process (CAP) and Donor Relations Section, supports relief mobilisation and the preparation of donor appeals.[140] Indeed, the Office for the Coordination of Humanitarian Affairs is involved in a variety of Disaster Relief Funding Activities:[141]

- *Consolidated Appeals Process* (*CAP*). Consolidated Inter-Agency Appeals are produced by OCHA on behalf of the members of the Inter-Agency Standing Committee. The CAP is how the United Nations and its partners work together to develop, carry out, and revise plans in response to humanitarian crises. The success of the international community in responding to humanitarian crises depends on a well-coordinated response, but also on raising the resources needed to ensure timely assistance. The CAP provides a framework for collaborative strategy-setting, common prioritisation, and joint fund-raising. Partners include the Red Cross/Red Crescent Movement, international and national non-governmental organisations, as well as other aid actors, such as international financial institutions, donors, and host governments.
- *Emergency Cash Grants.* At the request of the affected government, OCHA can provide emergency cash grants from its own reserves to meet immediate, specific relief needs of up to US$50,000 each. This emergency cash grant is meant for the local purchase and delivery of relief items.
- *Trust Fund for Disaster Relief.* To supplement these emergency grants, OCHA manages a Trust Fund for Disaster Relief of contributions from governments. Based on individual agreements with each government, the Emergency Relief Coordinator can allocate individual grants without prior donor consent to provide life-saving relief. This trust fund was established in 1971 by General Assembly resolutions 2816 with the objective to finance coordination and relief activities and provide the initial emergency grant once regular budget funds are exhausted. The fund enables OCHA to cover relief needs as an advance when the response of the donor community is slow. The earmarked contributions are deposited in separate accounts for specific affected countries or objectives.
- *Channelling Bilateral Funds.* In sudden-onset natural disasters, OCHA may also act as a channel for bilateral donor contributions and manage the emergency funds on their behalf. OCHA ensures that proposed interventions

[139] OCHA 2002:28.
[140] OCHA 2002:20.
[141] Sources: OCHA (2002), *The Consolidated Appeals and Global Humanitarian Assistance* <www.reliefweb.int/fts> and OCHA (2002) *United Nations Response to Natural disasters: Mandates, Roles and Mechanisms of UN entities in the Disaster Management Cycle* (Draft 5 February 2002)

are consistent with the consolidated appeal, that the projects are evaluated and that proper accounting measures are maintained.

- *The Central Emergency Revolving Fund* (*CERF*). Throughout an emergency, the Emergency Relief Coordinator (ERC) can also provide the overall relief effort with fast access to cash through the CERF. The CERF is a cash-flow mechanism to bridge the gaps between needs and available funding. Funded by donors, CERF monies are released to UN operational agencies interest-free at the outset of a crisis and sometimes during later phases to assist agencies with cash-flow problems before donor contributions become available. The mechanism requires that agencies borrowing from the fund pay back the loan within one year.

International Federation of Red Cross and Red Crescent Societies (*IFRC*)

The International Federation of Red Cross and Red Crescent Societies (IFRC), together with 178 national Red Cross and Red Crescent (RC) societies – boasting over 100 million volunteers – and the International Committee of the Red Cross (ICRC) form the Red Cross/Red Crescent Movement, the world's largest humanitarian network. The IFRC was founded just after the First World War to coordinate international assistance through National Societies to disaster victims, to encourage and promote the establishment and development of National Societies, and to act as a permanent body of liaison, coordination and study for National Societies. It has a Secretariat in Geneva and more than 60 delegations to support activities around the world. In light of the almost universal geographical spread of its national member societies, the IFRC is well placed to assist disaster victims worldwide. And this potential has been widely realised, making the RC Movement the largest NGO donor by far in 2001 (in particular for weather-related natural disasters, see below).

The IFRS' emergency response system is based on the right of National Societies to request support in a crisis, and of the Federation's Secretariat to offer support. The role of the Secretariat is that of coordinator; it launches international appeals to raise funds for the relief operations, and then mobilises personnel and relief goods. There are two kinds of appeals:

- At the beginning of each year an *Annual Appeal* is launched to fund programmes that meet an identified need that year.
- Emergency appeals are issued during the year in response to disasters that arise.

In 2001, the Annual Appeal sought CHF343million ($196m), mostly for humanitarian response measures – such as the ones carried out by the Yugoslav and the Kosovo RC Societies in caring for the refugees from the conflict in Yugoslavia, and ongoing programmes, such as the Disaster Relief Emergency Fund (see below) – with a success rate of 60%. Emergency appeals, in turn, sought CHF137m ($78m) and were 102% successful.

The Disaster Relief Emergency Fund[142]

The Disaster Relief Emergency Fund (DREF) – established already in 1985 – is the IFRC's premier tool for providing immediate support to national societies responding

[142] Main source: IFRC *Appeal 2001–2002: Disaster Relief Emergency Fund,* < http://www.ifrc.org/cgi/pdf_appeals.pl?annual01/017201.pdf >

to disasters. It is meant to fill the gap between the onset of a disaster and donor response to an appeal:

> Funding for emergencies is provided through donor support to emergency appeals, but the response to emergencies by national societies must start before the launching of an appeal and the receipt of pledges and contributions. The critical function of the DREF is to fill this gap. While some national societies have significant resources already in place to respond to emergencies, many have limited resources and depend on DREF to provide the initial financial support to underwrite the costs of immediate response initiatives.

The DREF is a revolving fund providing credit to national RC societies that can be released at any time for any disaster without requiring an appeal to be launched. At present, the DREF is practically used in each new emergency. Notwithstanding this frequency of use, the IFRC acknowledges that while a more automatic DREF funding would make a significant difference to the ability of national societies' disaster response planning, 'only by increasing the size of the fund can the Federation make DREF funding a more certain guarantee of emergency response'. The IFRC's plan in 2001–02 for increasing the effectiveness of the DREF is thus to increase its size and to improve its recovery mechanism, in order for the fund to become an *automatic* line of credit for new emergencies.

The International Disaster Response Law Initiative[143]

According to an IFRC concept paper prepared for its Council of Delegates in August 2001, 'there has been a widening debate on the adequacy of existing mechanisms to respond to disasters and other emergencies requesting international relief activities as it is realised, that the causes and effects of disasters are becoming more and more transboundary'.[144] Supporting the view 'that the legal framework for international disaster response requires significant improvement if it is to create genuinely favourable conditions for expedited and effective disaster response,' the paper proceeds to describe the IFRC's *International Disaster Response Law* (IDRL) Initiative.

This IDRL initiative recognises the existence of a wide variety of national and international (bilateral, multilateral and customary) legal instruments – 'covering humanitarian response to natural and technological disasters, including in the areas of disaster prevention, preparedness, relief and post-disaster rehabilitation' – scattered throughout many different legal domains, such as Environmental Law, Air and Space Law, Development Law and the like. The initiative is aimed at drawing together these scattered threads of hard and soft law in order 'to enable States, National Societies, humanitarian agencies ... to determine the need for action in a variety of related fields'.[145] In short, the IDRL initiative is an information gathering and sharing project with the aim 'to enhance the application of existing law,' and not an initiative to replace the existing legal texts with a more coherent framework.

The Red Cross/Red Crescent Climate Centre

The 1999 edition of the *World Disasters Report,* the IFRC highlights the fact that the number of weather-related ('hydro-meteorological-') disaster is in the rise (see below). In the 2001 edition, the IFRC acknowledges that:

[143] Main source: IFRC, 'International Disaster Response Law' 2001.
[144] IFRC, 'International Disaster Response Law':4.
[145] IFRC, 'International Disaster Response Law':5.

> The local manifestations of climate change in poor countries place an enormous responsibility on the major aid-giving nations. The latter commonly both create the problem and set the terms by which the problem will be managed. Their responsibility is to identify appropriate and commensurate policies and resources. ... The challenge is both to take appropriate action prior to disasters and to ensure coherence between macroeconomic policies and local recovery strategies[146]

Based on these insights, the IFRC decided to support the idea of an RC Climate Centre (RCCC) as one of its decentralised 'centres of expertise'. The RCCC was recently established at The Hague under the auspices of the Netherlands Red Cross. The RCCC sees its role as one of bridge-building between 'climate change and Disaster Preparedness', between welfare agencies working in developing countries – which, 'so far ... have tended to be unfamiliar with climate-related issues' – and scientists and policy-makers who are familiar with these issues but are also 'aware that they can only exert a limited influence in the field' without the active collaboration of humanitarian organisations.

7.3 What is the Problem?

9 February 2000 The floods started on 9 February with heavy rainfall across Southern Africa. In South Africa, 26 people were killed .... But southern Mozambique bore the full impact of the rains and rising waters. In the capital Maputo tens of thousands of people were forced to flee their homes. The worst hit were people living in makeshift homes in the slums around the capital. Further north, hundreds of thousands of people were left homeless in Gaza province.

11 February As flooding and torrential rain continue, fears grow for the health of those made homeless. United Nations officials say the lives of 150,000 people are in immediate danger from lack of food and disease.

22 February The full force of tropical Cyclone Eline hits the Mozambique coast near the central city of Beira – just north of the areas already devastated by the first floods.

27 February Flash floods inundate low farmlands around Chokwe and Xai-Xai in Mozambique.

2 March Aid workers estimate 100,000 people need to be evacuated and around 7,000 are trapped in trees. Many have been there for several days, without food and water. Floodwater levels are said to have risen from four to eight metres (more than 26 feet) in five days. The international community begins to send in relief workers and [a handful of] helicopters.[147]

Some aspects of the millenarian floods in Mozambique were no doubt extraordinary, yet there were others that were painfully 'normal'. Among these more ordinary characteristics were, first of all, the size of the disaster in terms of the number of affected people. As shown in Fig. 5a (Section 6.1), year 2000 saw a total of 255m people affected by weather-related disasters (Fig. 5a), with the April drought in India by far the largest single event. The Mozambique floods were more or less average: with less than 0.6% of total global population affected, it was the 39th largest disaster of the year. This illustrates graphically a point made earlier (Section 6.6), namely the fact that most of these disaster burdens are dealt with domestically. And, significantly, it also indicates the vulnerability of the international system to the prospect of the projected increase in the numbers of people affected exceeding the capacity of domestic relief and thus stretching the international relief system by more than just its current proportion of the relief burden.

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[146] IFRC *World Disasters Report 2001*:48.

[147] BBC News Online (2000), 'Mozambique: How disaster unfolded'.

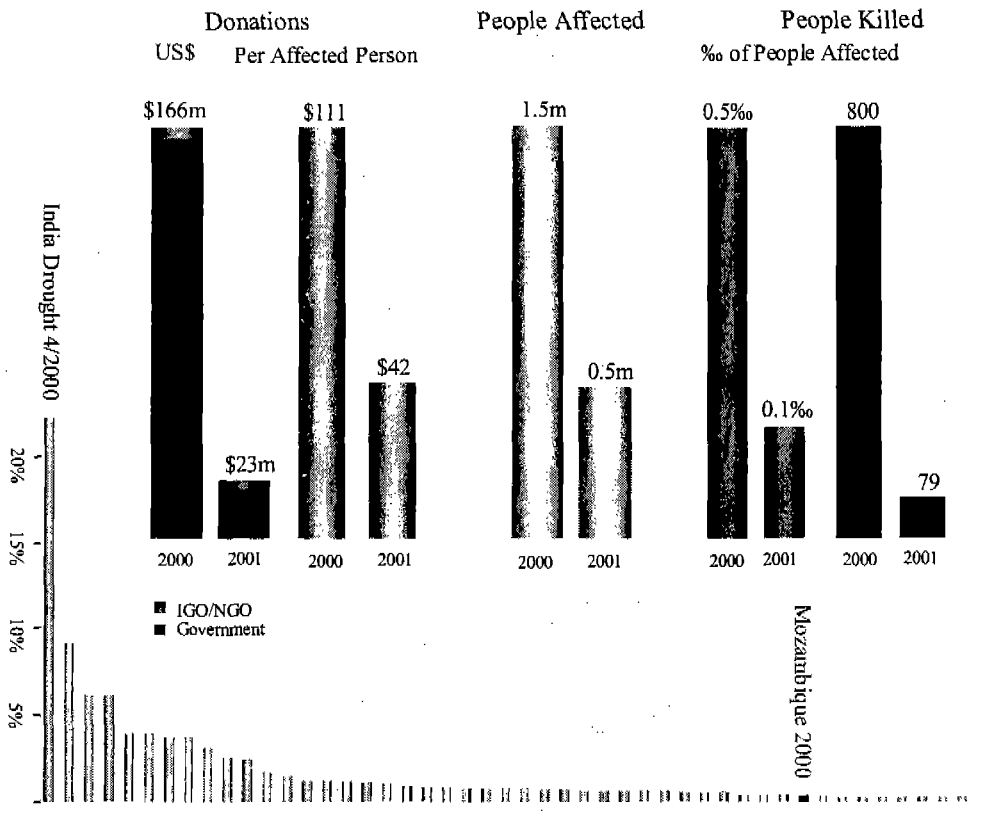

Figure 21: The Mozambique Floods

Arguably their most extraordinary aspect – already mentioned in the first section of this chapter – was the sheer size of international donations, amounting to over half of *all* the donations recorded in the UN Financial Tracking System for the year 2000. Indeed, when compared to the floods of the following year (Fig. 21), we find the 2000 donations (recorded in the UN FTS) to be significantly higher – particularly from bilateral donors – both in absolute (7×) and in terms relative to the number of people affected (3×).

Yet even with this relative superior funding, the relief effort in 2000 was less successful, at least when measured in terms of fatalities, or rather in terms of fatalities per unit of affected population (Fig. 21). Why should that be so? There are, not surprisingly, a host of possible reasons. For one, it may well be that 'practice improves preparedness,' as argued in the chapter of the most recent *World Disasters Report* discussing the experiences of the 2000/01 Mozambique floods. But it is questionable whether mere 'practice' could explain the rather extreme inverse correlation between performance and donations received. Whatever the complete answer may be, one thing can be said with reasonable certainty: the preparedness in question cannot be a function of the donations, simply because (most) of the donations are collected after the onset of the event. This is not to say that the degree of preparedness does not depend on the level of funding: on the contrary, there are reasons to believe that the level of preparedness in 2001 was in no small measure better than in the previous year because it was possible to draw on 'surplus funds'

from the 2000 donations.[148] Indeed, one of the key problems in the present international disaster relief system is its almost exclusive reliance on ex post voluntary donations that, by their very nature, preclude an adequate disaster preparedness regime.

The Funding Problem. In 'Disasters: Why the world waits' (Box 16), Emma Batha makes the point that much suffering in the Mozambique 2000 context could have been prevented through a more efficient international response regime. She identifies two main problems in this context: 'the piecemeal approach to funding [the charitable nature of much of the funding means that funds are not available in time for rapid reaction, if at all] and a lack of co-ordination between governments and aid agencies. ...What the UN and many other bodies would like to see is a pool of money made available at the beginning of each year for emergencies. A few countries – Italy, Norway and the UK – have started paying up front, but the amounts are still very small.' This point is also taken up in a recent assessment by the UN Office for the Coordination of Humanitarian Affairs (OCHA): 'OCHA still faces a number of key challenges with respect to its funding that require continued donor support, now and in the future. These include: ... the OCHA Trust Fund for Disaster Relief, which provides cash grants of up to US$ 50,000 to countries affected by natural disaster, is supported by only a small pool of donors.'[149]

The Double-edged Media Sword and Bilateral Strategic Considerations. Under the present funding mechanisms, both fund raising and the use of fund can be, and often are, influenced by non-humanitarian considerations. For one, there is the 'double-edged sword' of media coverage (see Box 17). The level of donations – under the current system – is prone to be more closely related to the media prominence of the disaster than to actual humanitarian needs: 'There is an underlying problem that funds are skewed disproportionately towards situations of high media profile rather than actual need.'[150] Another problem which is a consequence of this relationship is that relief itself may follow the presence of the media, i.e. that relief is more likely to occur where there are cameras to record it, in order to ensure sufficient media exposure of the agencies involved for the purpose of (future) fundraising activities.

Another 'unholy alliance' arises from the bilateral nature of most of the current donations, introducing strategic considerations into the funding of the relief effort. For example, recently Iranian 'President Mohammad Khatami said Iran is ready to accept U.S. aid to help his country recover from an earthquake that killed 245 people and left thousands homeless. .... Iran previously had declined President Bush's offer of assistance and said it would only accept aid from non-governmental organizations.'[151] The reason for rejecting the US offer was the US administration's recent classification of Iran as part of an 'axis of evil'. Naturally, similar non-humanitarian factors can be

[148] 'The delegation of authority by the DEC [UK Disasters Emergency Committee] to the DEC agency group in Maputo for the allocation of 'surplus' appeal funds was very positive in that it enabled the agencies in Mozambique to react very quickly to the 2001 floods.' ['Executive Summary' in John Cosgrave, Kerry Selvester, Lourdes Fidalgo, Alistair Hallam, and Nelia Taimo, *Independent Evaluation of Expenditure of DEC Mozambique Floods Appeal Funds:March 2000 – December 2000*, Oxford: Valid International (www.validinternational.org) and ANSA, July 2001.

[149] OCHA 2002:2

[150] UK Disasters Emergency Committee DEC: *Independent Evaluation: The DEC Response to the Earthquake in Gujarat* 2001

[151] *USA Today*, Wednesday 26 June 2002: page 6A.

Box 16: Disasters: Why the world waits

Friday, 7 April, 2000, 16:26 GMT 17:26 UK
By BBC News Online's Emma Batha

... The international relief effort [in Mozambique] did not get seriously under way until three weeks after the rains began. Shepard Foreman, director of the Center on International Co-operation in New York which looks at disaster management, said the response was 'absolutely shocking'. ... But Mozambique was hardly the first such catastrophe. ... Natural disasters have killed more than 110,000 people over the last two years and millions more have lost homes and livelihoods. The United Nations which, ironically, has just completed an International Decade of Natural Disaster Reduction, reports the number of catastrophes has trebled over the last 10 years. Even if earthquakes and cyclones are unpredictable in themselves, they happen with a predictable regularity – so why is the response frequently so slow? There appear to be two main problems – the piecemeal approach to funding and a lack of co-ordination between governments and aid agencies.

Cash Appeals are only made once there is a crisis, which means the money starts coming in after it is needed for the initial mass evacuations. Donations then pour in at a higher rate than the agencies spend it, but tail off once the catastrophe drops out of the headlines, even though there are usually still thousands of homeless to feed and shelter. Fabrizio Gentiloni of the UN's Rapid Disaster Response Branch says: 'The root cause of the delay in responding is that cash is frequently unavailable at the beginning and you have to scream for help from donors. 'You have to have money to rent the helicopters and arrange charters, but there is often a gap between the pledge being made and the donation arriving.' What the UN and many other bodies would like to see is a pool of money made available at the beginning of each year for emergencies. A few countries – Italy, Norway and the UK – have started paying up front, but the amounts are still very small. Peter Walker of the International Federation of Red Cross and Red Crescent Societies says: 'The way we respond is incredibly ad hoc, which is daft in a way because we can say at least two thirds of what our needs will be. 'For example, I'm 90% certain we will have a relief operation in Bangladesh every year for floods.'

Helicopters. ... Mr Walker says that although the world had focused on the shortage of helicopters, they are not the real solution for flood operations - they make the news because they are "photogenic". The most cost-effective way of saving people in floods is with boats which, unlike

Box 17: Media coverage – a double-edged sword

Spectacular images of heli-borne rescues on live TV were beamed around the world during the floods of 2000. The subsequent influx of material and financial aid, culminating in pledges of US$ 470 million to reconstruct Mozambique, were at least partly due to this international media coverage. ... During the 2001 floods, however, negative media coverage may have been partly responsible for a meaner international response. ...

While the large number of international planes that came after the flood were often too late to rescue anyone from trees or rooftops, they nevertheless saved thousands of lives, precisely because they transported food to those who were stranded. 'Shuttling food' may not be high profile, it does not make good TV and it doesn't create such a warm glow in the hearts of donors – but it is what's needed in a flood like this.

However, the result in 2001 was less TV coverage, less donor interest, and therefore fewer planes and less food. By late March, with the press long gone, people were running out of food – and the river was not falling. More than 500 people a day, on foot and in boats, were making their way to accommodation centres. The roads in the Zambezi valley had turned from dirt to mud. Airlifts were the only way to get food to people, but there were just 20 aircraft to do the job. By May, there were 220,000 people in 65 centres. With less foreign aid, and especially fewer planes, conditions in the centres were not as good as during 2000. The ministry of health reported 'severe nutritional problems' in some centres, and there were reports of cholera. ...

Source: *WDR 2002*:64.

in play also on the donor side when aid is not forthcoming due to strategic considerations.

None of these external considerations and ties are conducive to an effective disaster relief regime. The following final chapter of this study introduces a simple proposal of how these shortcomings in the present international disaster relief system could be avoided and become more efficient, in order to pre-empt at least one of the many climate impact inequities we are facing in the current climate change regime.

8. An FCCC Climate Impact Relief Fund

8.1 The Proposal

The Problem. The preceding chapter argued that in light of the number of people projected to be affected by hydro-meteorological ('weather-related') disasters by the 2030s, the international disaster relief system in its current form may soon be stretched beyond breaking point. The key problem of the present international relief system was seen to lie not in its institutional structure, but in its use of *ex post* voluntary donations as the primary funding mechanism. After all, it stands to reason that if this type of disaster relief funding were indeed appropriate for the purpose, it would have caught on at the national level. And since (to my knowledge) no single country in the world has chosen to fund its ambulance and fire services by way of charitable donations collected after the event, one can legitimately conclude that 'revealed domestic preference' supports the conclusion about the present funding regime for international disaster relief being problematic. But what can be done to overcome this problem? A recent call by Germany and Austria for a re-introduction of an EU catastrophe fund in the wake of the Central European 'centennial floods' points in the direction of what this study envisages as the most appropriate solution.[152]

The Solution. Creating a *Climate Impact Relief* (CIR) *Fund* – based on the tried and tested models of the OCHA[153] *Trust Fund for Disaster Relief* and the IFRC[154] *Disaster Relief Emergency Fund* – under the Framework Convention on Climate Change to cover the expenditures for international weather-related disaster relief and preparedness. To resolve some of the key problems in the current system, such a Fund would have to

- be replenished regularly on an up-front basis, and
- rely on existing institutional infrastructures.

The latter could, for example, be achieved by having the fund administered by the UN Office for the Coordination of Humanitarian Affairs (OCHA) under the guidance of the FCCC COP and the UN Under-Secretary-General for Humanitarian Affairs in collaboration with IASC agencies.[155] For reasons of equity and precedent, the contributions to the fund should come from the developed country FCCC Parties – who would be following the lead of a small pool of donors such as Italy, Norway and the United Kingdom in their use of up-front payments for disaster relief purposes.

Operationalising the idea of such a Fund will involve a host of choices between different 'architectural features', some of which will be discussed below. The only essential features – 'non-negotiable,' as it were, if the Fund is to achieve its purpose – are the regular up-front funding and the central coordination of the contributions.

[152] 'The German and Austrian Chancellors, Gerhard Schröder and Wolfgang Schüssel, called for an EU catastrophe fund to be set up next year to deal with any future disasters. Mr Schröder has indicated that its budget could be around 500 million euro. The catastrophe fund would have to be approved by the European Parliament, which abolished a similar fund in 1997 because it was regarded as too small and rarely used. The EU therefore has no budget to deal with natural disasters.'['Central Europe to receive EU aid for flood recovery,' 19 August 2002, http://www.euractiv.com] 'The European Commission has proposed to set up a 500–1,000 million euro disaster relief fund to deal with natural, technological or environmental disasters in the EU'['Commission proposes setting up an EU disaster fund', *op. cit.* 29 August 2002]

[153] UN Office for the Coordination of Humanitarian Affairs (see Section 7.2).

[154] International Federation of Red Cross and Red Crescent societies (Section 7.2)

[155] Inter-Agency Standing Committee, Section 7.2.

These two characteristics are not only necessary to set disaster preparedness on the required footing, but they would in all likelihood also be sufficient to sever certain undesirable ties that are at least in part responsible for serious shortcomings of the current international disaster relief system.

Elimination of Non-humanitarian Determinants. Apart from the general coordination problems, two types of counter-productive non-humanitarian components in the current international relief system were identified (Section 7.3) that could be overcome by the proposed changes in the funding mechanism.

(a) The *ex post* (and charitable) nature of the donations introduces a set of criteria regarding the provision of disaster relief connected to media activities which – under the current funding regime – can seriously undermine the efficiency and effectiveness of the relief provided: for the fact is that the level of donations is liable to be determined more by the degree of media exposure than by the humanitarian needs.[156]

(b) Another counter-productive determinant of the present system is brought about by the mostly bilateral nature of donations which can introduce political considerations concerning the larger strategic picture between donor and recipient countries into the decision-making framework: consequently, donors may not be willing to give – or recipients, for that matter, willing to receive – donations due to such political considerations, even though donations might be needed when judged on purely humanitarian grounds.[157]

Both of these factors are obstacles to an efficient and effective relief system, and both can be overcome by the proposed introduction of centrally coordinated, regular up-front contributions. Assuming the international community intends to continue providing an international disaster relief system, the key characteristics of the present proposal for achieving these improvements are:

• No new money. • No new institutions. • Merely more efficient funding.

8.2 Operational Issues and non-Issues

Apart from the features essential to the desired functioning of the envisaged Climate Impact Relief Fund – regular, up-front contributions and central coordination – there is, as mentioned above, bound to be a host of further points in need of clarification in operationalising such a fund. This section considers briefly four of the more prominent ones, two genuine issues with a variety of viable options, and two that, upon inspection, turn out to be non-issues.

Operational Issues. The genuine operational issues in question are both centred around the perennial funding questions of 'What is the money to be spent on?' and 'Who is going to pay how much?'

The Scope. What are the envisaged CIR-contributions to be used for? The answer, suggested by the nomenclature, is: (international) relief efforts for climate impact disasters. The restriction to *international* efforts is pragmatically motivated. The

[156] 'The ideal solution would be for the DEC to persuade DFID [UK Department for International Development] and ECHO [European Commission's Humanitarian Aid Office] to retain their funds for situations with less media coverage where a public appeal has not taken place.' [UK Disasters Emergency Committee DEC: *Independent Evaluation: The DEC Response to the Earthquake in Gujarat*, 2001]

[157] See Section 7.3.

present organisation of disaster relief in the world entails that – in contrast to the purely international case (see below) – an inclusion of domestic relief measures would raise the so-called 'attribution' question as a genuine issue simply because it would involve raising funds for purposes hitherto not covered by the international community.[158] In the present situation, this would very likely derail any attempts at operationalising such a fund.

As a fund for international relief, '*disaster*' is meant to refer to 'a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources.'[159] '*Climate Impact*' disasters, in turn, would probably be interpreted as disasters (in this international sense) caused by climate-related 'natural' hazards. Even though anthropogenic attribution is not an issue in the context of current international disaster relief, this may again change if the scope is extended beyond the type of climate-related disasters currently dealt with under the international relief system, i.e. hydro-meteorological disasters arising from extreme weather events.[160]

The Total Burden. In light of the donations recorded by the UN Financial Tracking System for hydro-meteorological disasters – $495m for the period of 2000–01 – a total contribution of $300m per annum (to be reviewed on a regular basis) might initially be adequate to achieve the aim of the proposed CIR-Fund. And while the exact sum required may differ from this estimate and is bound to increase over the next decades, the sum total of contributions required would remain 'old money,' assuming that the international community continues to finance international disaster relief and thus keep the provision of emergency relief as part of national budgets. The only difference to those paying for this international relief would be that under the proposed CIR-Fund the over-all costs might be significantly lower than under the present system.

Burden sharing. Accordingly, the only real 'burden question' involved in the proposed introduction of such a CIR-fund would be: 'Who is to pay what share?' As indicated in the core description of this Fund, the answer is for reasons of equity and precedent: 'the developed FCCC Parties'. There are at least two ways in which this phrase could be operationalised: it could be interpreted as referring to the countries listed in Annex II of the Framework Convention, or it could be used as referring to the member countries of the OECD. Given the dominant role of OECD donors in the current international disaster relief system, the following illustration uses the latter interpretation, i.e. a funding by OECD countries.

How should the envisaged CIR-contributions be shared in this case? Not surprisingly, there are quite a few options, and possibly equally many opinions. Consider, in a first instance, a 'status quo' (a type of 'grandfathering') approach, under which shares would be equal to the present shares in the relief donations for hydro-meteorological disasters. As illustrated in Fig. 21, this would mean that the European Union (i.e. member states + European Commission) continues to carry the bulk, namely two-thirds of the burden, followed by the United States with 16 and Japan with 8 percent of the total (OECD) contributions.

[158] See Section 6.6.

[159] Internationally agreed glossary of basic terms IDNDR/DHA, 1992.

[160] This is not to say that climatic impacts other than those caused by extreme events might not give rise to international disasters, but for pragmatic reasons it might be more fruitful at the present to define the scope of disasters to be dealt with by the CIR-Fund by way of a positive list, initially confined to these hydro-meteorological disasters.

Box 18: Indicative Scales

	'90 CO_2*	FCCC**	CIR Fund
Austria	0.54%	0.924	1.04%
Belgium	1.03%	1.102	1.25%
Denmark	0.48%	0.731	0.83%
Finland	0.49%	0.509	0.58%
France	3.34%	6.31	7.13%
Germany	9.23%	9.534	10.78%
Greece	0.75%	0.526	0.59%
Ireland	0.28%	0.288	0.33%
Italy	3.91%	4.943	5.59%
Luxembourg	0.10%	0.077	0.09%
Netherlands	1.53%	1.696	1.92%
Portugal	0.38%	0.451	0.51%
Spain	2.38%	2.459	2.78%
Sweden	0.56%	1.002	1.13%
UK	5.33%	5.402	6.11%
European Community		2.5	2.83%
EU members + EC	**30.33%**	**38.454**	**43.46%**
USA	**45.20%**	**21.304**	**24.08%**
Japan	**10.70%**	**19.047**	**21.53%**
Canada	4.17%	2.497	2.82%
Republic of Korea		1.807	2.04%
Australia	2.64%	1.588	1.79%
Switzerland	0.40%	1.234	1.39%
Mexico		1.06	1.20%
Norway	0.32%	0.631	0.71%
Poland	3.78%	0.309	0.35%
New Zealand	0.23%	0.235	0.27%
Czech Republic	1.55%	0.167	0.19%
Hungary	0.65%	0.117	0.13%
Iceland	0.02%	0.032	0.04%
Rest of OECD	**13.76%**	**9.677**	**10.94%**
Total OECD	**100.00%**	**88.482**	**100.00%**

Sources: *CO_2 emissions for the purposes of Article 25 of the Kyoto Protocol FCCC/CP/1997/7/Add.1. **Report of the Conference of the Parties on its Seventh Session, held at Marrakech From 29 October To 10 November 2001: Addendum; Part Two: Action Taken By The Conference Of The Parties; Volume IV; FCCC/CP/2001/13/Add.4.

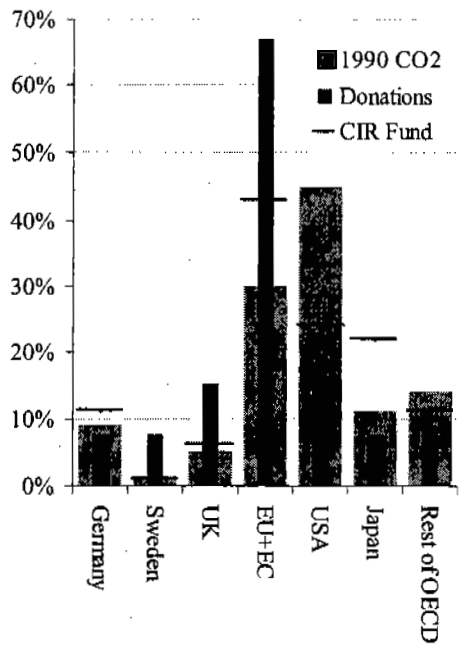

Figure 22: Sharing the Burden. Percent of OECD Totals

While feasible under the present system with its *ad hoc*, uncoordinated donations, it seems unlikely that this sort differentiation would remain acceptable under a more systematic approach, particularly if compared with what could arguably be regarded as fair distributions (see Section 6.6), be it in proportion to affluence ('ability to pay') or in proportion to causal responsibility ('polluter pays'). For illustrative purposes, take the latter and assume it to be operationalised in terms of some base-year, say 1990 CO_2 emissions.[161] Figure 22 illustrates graphically the current state of affairs being quite different from what would be expected of the Parties if their contribution were defined in terms of their 'common but differentiated responsibilities'.[162] Indeed, with a share of 30 percent, the EU

[161] Note: while not a particularly suitable 'responsibility measure' in the context of North–South comparison, the proportions of 1990 CO_2 emission are probably not a bad proxy measure of the relative responsibility of OECD countries, given the similarity in their economic histories.

[162] '... the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their

would be required to contribute less than half of their current share in the funding of weather-related disaster relief, while the US would be asked to significantly increase their share of the burden and pay around US$ 0.50 per head of its population.[163]

Politically, it may however be more expedient to follow the established FCCC burden sharing scheme (essentially the same as that of the UN). Using the 'indicative scale' for 2002 FCCC contributions (Box 18), the EU share would be less dramatically reduced from its current level of 67% to 43%, while the US share (24%) would only rise to about half of what it would have been under the differentiated responsibility burden sharing rule – or, in absolute terms, $0.14 over the current average annual US per capita donation of $0.12.

Operational non-Issues. The two operational concerns which have been most prominently raised in preliminary discussions about the introduction of such a Climate Impact Relief Fund under the FCCC involve the issue of 'attribution', on the one hand, and the danger of creating a 'moral hazard,' on the other.

Attribution. The 'attribution objection' to introducing a fund of the envisaged type is based on the contention that, as an FCCC instrument, it would have to rely on an impractical, if not impossible distinction between anthropogenic and natural (components of) weather-related disasters. As Section 6.6 already argued at some length against this objection, the following sketch of this reply will have to suffice at this point.

Attribution might have been an issue if the FCCC were to recognise only funding on the basis of the causal responsibilities for anthropogenic climatic changes. However, it also acknowledges a principle of differentiated capabilities, corresponding in its 'ability to pay' interpretation to the humanitarian principle of solidarity that guides the current emergency response funding structures without appealing to this anthropogenic/natural distinction. Accordingly CIR-contributions for international emergency relief to anthropogenic (components of) disasters would be justified by the FCCC principle of common but differentiated responsibilities, those for the relief of 'natural' (components of) disasters would be justifiable on humanitarian grounds by reference to the FCCC principle of differentiated capabilities. In addition, the fact that at present causal responsibility and ability to pay are more or less proportional turns the issue of differentiating between anthropogenic and natural relief burdens into an irrelevance.

Moral Hazard – an incentive to seeking an illegitimate advantage to the detriment of others (see Box 19) – is by no means a new phenomenon. It was already articulated by Adam Smith in his *Wealth of Nations* and there have been many different proposals of how to mitigate it in different situations: 'bankruptcy and limited liability provisions insure borrowers against extremely unfavourable states of nature without limiting the gains from extremely favourable ones. This creates a moral hazard problem, inducing borrowers to undertake riskier projects. ... lenders will sometimes require collateral and ration loans in attempting to overcome these difficulties.'[164]

Most of the literature on moral hazard has focused on the insurance-related case where there is a conflict between incentives and risk sharing and the moral hazard

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common but differentiated responsibilities and respective capabilities and their social and economic conditions, ...'[UNFCCC, Preamble]

[163] 45% of $300m/US 2001 population: 278,058,881 (www.cia.gov/cia/publications/factbook/)

[164] *The New Palgrave: A Dictionary of Economics*, vol 3:550.

objection to the introduction of a Climate Impact Relief Fund is of insurance-related type, for it is alleged that introducing such a fund would create incentives in the potential recipients to take risks in their domestic relief provision at the expense of the international community responsible for replenishing the CRI-Fund.

Box 19: Moral Hazard

Moral hazard may be defined as actions of economic agents in maximizing their own utility to the detriment of others, in situations where they do not bear the full consequences or, equivalently, do not enjoy the full benefits of their actions *due to uncertainty or incomplete or restricted contracts* which prevent the assignment of *full* damages (benefits) to the agent responsible.

The New Palgrave: A Dictionary of Economics Vol. 3, p 549

No doubt, a functioning emergency relief system is a form of 'insurance' – albeit of a different kind than the financial instruments of the same name – which is why it is not impossible that the introduction of such a CIR-Fund could lead to a 'moral insurance hazard.'[165] However, there are several considerations which put such a possibility into perspective.

In a first instance, the question is not really whether the introduction of a CIR-Fund would generate a new moral hazard, but whether it would significantly increase a moral hazard already given in the existing international relief system. The proposal, after all, is not to create an international relief system, but merely to modify its funding mechanism. And to ensure that the modified system retains exactly the same level of moral hazard as its unmodified existing version, all one would have to do is retain the present criteria for granting international disaster relief.

Having said this, it may be desirable to put this distribution system on a more 'entitlement-based' footing, in particular in the context of the envisaged disaster preparedness measures to be financed by the *ex ante* contribution to the CIR-Fund. In this case there could indeed be the danger of a magnified insurance-type moral hazard. However, this could easily be overcome by the then wholly appropriate demand by the contributors for a system of controls to check that the funded disaster preparedness measures are carried out satisfactorily. Indeed, the fact that the funding under the CIR-Fund would be centrally coordinated and administered would also make the chance of undetected misuse of funds smaller than under the current system of largely uncoordinated short-notice bilateral money transfers. In short, it stands to reason that the proposed modification of the current relief system would actually diminish its moral hazard rather than magnify it.

Whether or not it might be possible to create an international disaster relief system without any trace of moral hazard is questionable. However, the worst the proposed introduction of a CIR-Fund could do is to generate a level of moral hazard in international relief for weather-related disasters which every country seems to accept in its domestic emergency relief. Unless this were to change, moral hazard remains a non-issue in the context of introducing a Climate Impact Relief Fund.

[165] Note that moral hazards can also arise in quite different contexts, such as that of joint production, where liabilities of the product cannot easily be attributed to any of the joint-producers (which may be one of the key problems in the economics of climate change, given the inherent attribution problem).

8.3 The FCCC as Home for Climate Impact Relief

Having discussed the need for reform of the present funding arrangements for international disaster relief and put forward the idea of a Climate Impact Relief (CIR) Fund as solution to the identified problems, the final set of questions to be addressed here concerns the envisaged 'home' of this CIR-Fund, namely the UN Framework Convention on Climate Change (FCCC). Two key issues are to be discussed, namely (a) Can such a CIR-fund be introduced under the FCCC, and (b) if yes, should it be done?

Box 20: The Marrakech Framework for Developing Country Capacity Building

Scope

15. The following is the initial scope of needs and areas for capacity-building in developing countries ...:

(a) Institutional capacity-building, including the strengthening or establishment, as appropriate, of national climate change secretariats or national focal points;
(b) Enhancement and/or creation of an enabling environment;
(c) National communications;
(d) National climate change programmes;
(e) Greenhouse gas inventories, emission database management, and systems for collecting, managing and utilizing activity data and emission factors;
(f) Vulnerability and adaptation assessment;
(g) Capacity-building for implementation of adaptation measures;
(h) Assessment for implementation of mitigation options;
(i) Research and systematic observation, including meteorological, hydrological and climatological services;
(j) Development and transfer of technology;
(k) Improved decision-making, including assistance for participation in international negotiations;
(l) Clean development mechanism;
(m) Needs arising out of the implementation of Article 4, paragraphs 8 and 9, of the Convention;
(n) Education, training and public awareness;
(o) Information and networking, including the establishment of databases.

Specific scope for capacity-building in least developed countries

17. The least developed countries, and small island developing States amongst them, are among the most vulnerable to extreme weather events and the adverse effects of climate change. They also have the least capacity to cope with and adapt to the adverse effects of climate change.

The following is the initial assessment of needs and priority areas for capacity-building in these countries:

(a) Strengthening existing and, where needed, establishing national climate change secretariats or focal points to enable the effective implementation of the Convention and effective participation in the Kyoto Protocol process, including preparation of national communications;
(b) Developing an integrated implementation programme which takes into account the role of research and training in capacity-building;
(c) Developing and enhancing technical capacities and skills to carry out and effectively integrate vulnerability and adaptation assessments into sustainable development programmes and develop national adaptation programmes of action;
(d) Strengthening existing and, where needed, establishing national research and training institutions in order to ensure the sustainability of the capacity-building programmes;
(e) Strengthening the capacity of meteorological and hydrological services to collect, analyse, interpret and disseminate weather and climate information to support implementation of national adaptation programmes of action;
(f) Enhancing public awareness (level of understanding and human capacity development).

The first step in addressing these issues is to consider the more general question whether disaster *response* (including disaster *relief*) can actually be dealt with under the FCCC at all. If so, the next step will be to ask whether the existing architecture of the Convention is not in itself sufficient to achieve the aims of the proposed CIR-Fund. The final question will then be whether the FCCC is really an appropriate 'home' for the proposed CIR-Fund?

Can disaster response be dealt with under the FCCC? The Seventh Session of the Conference of the FCCC Parties (COP7) in Marrakech not only managed to finalise the operational details of the Kyoto Protocol, but also made some important decisions on issues traditionally referred to in terms of 'adaptation'.[166] For one, COP7 adopted frameworks for capacity-building in developing (non-Annex I) countries and in countries with economies in transition with the purpose of setting out the scope of such activities as related to the implementation of the Convention. The initial scope of these frameworks (Box 20) is firmly based on regular adaptive capacity building which – in the context of disasters – is concerned with preventive rather than response measures.

The main disaster (response) related decisions taken at Marrakech are to be found in the Decision on the Implementation of FCCC Article 4.8 (and 4.9) contained in the Marrakech Accords. Article 4 – for those unfamiliar with the details of the FCCC – contains the commitments undertaken by the Parties:

- In 4.1, it stipulates that all Parties, taking into account their common but differentiated responsibilities shall *inter alia* 'cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods'.[167]
- Article 4.8 in turn commits the Parties to give full consideration in the implementation of their commitments 'to what actions are necessary under the Convention – including actions related to funding, insurance and the transfer of technology – to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change, ..., especially on: (d) Countries with areas prone to natural disasters.'

The range of actions covered by Art. 4.1 is very wide, encompassing, to use the examples cited by Farhana Yamin 'actions relating to research and planning, as well as actions facilitating adaptation to climate change (such as retreat, accommodation and protection strategies) as well as "ultimate" adaptation options (such as abandonment, evacuation and resettlement of human and/or entire ecosystems)'.[168] Yet most, if not all, of the actions in Art. 4.1 seem to have the character of regular adaptation measures with the aim of preventing disasters to happen in the first place.[169]

The Decision on the Implementation of FCCC Articles 4.8 (and 4.9) in the Marrakech Accords, however, does list a number of activities related to *responding* to disasters,

[166] Although Section 5.2 argued that this term is inappropriate for the context of climate change impacts, 'adaptation' is the term used in the FCCC documents which is why it can obviously not be avoided in the present context.
[167] FCCC Art. 4.1(e).
[168] Farhana Yamin (1998), 'The Clean Development Mechanism and Adaptation' Paper for the FCCC Secretariat Workshop Capacity Building For Project Based Mechanisms, Abidjan, 17-18 September 1998; Part I.
[169] Even though some of Yamin's "ultimate" adaptation options (abandonment, evacuation and resettlement) can be interpreted as disaster response measures, it is likely that, given their juxtaposition, they are to be interpreted as (proactive or reactive) regular adaptation activities.

activities which are to be supported through the Global Environment Facility (GEF), the Special Climate Change Fund, the Adaptation Fund, and other bilateral and multilateral sources, namely:

- Supporting capacity-building, including institutional capacity, for preventive measures, planning, preparedness of disasters relating to climate change, including contingency planning, in particular, for droughts and floods in areas prone to extreme weather events.[170]
- Strengthening existing and, where needed, establishing early warning systems for extreme weather events in an integrated and interdisciplinary manner to assist developing country Parties, in particular those most vulnerable to climate change.[171]
- Strengthening existing and, where needed, establishing national and regional centres and information networks for rapid response to extreme weather events, utilizing information technology as much as possible;[172]
- Supporting capacity-building, including institutional capacity, for preventive measures, planning, preparedness and management of disasters relating to climate change, including contingency planning, in particular, for droughts and floods in areas prone to extreme weather events.[173]

These decisions confirm that issues relating to disaster *response* can, and have been discussed under the FCCC. The next question is whether these decisions could be sufficient in themselves to overcome the three main problems identified in the earlier analysis of the current international relief system – inappropriate funding mechanisms, lack of international coordination, lack of preventive measures – or whether they would have to be complemented with an additional set of further-reaching decisions.

Can the aims of the proposed CIR-Fund be achieved under the existing FCCC architecture? At least one of the three problem areas mentioned above is unequivocally addressed in the decisions taken at Marrakech, namely the need for preventive measures such as early warning systems for extreme weather events. But is the same true for the remaining two areas?

The Problem of Funding. Under the FCCC, funding of the four disaster response related decisions is to be undertaken through its original Funding Mechanism – administered by the Global Environment Facility (GEF) – and the Special Climate Change Fund (the latter established together with the Kyoto Protocol Adaptation Fund in July 2001 at COP6-bis in Bonn[174]). The problem with this type of funding – at least as far as can be gauged from the GEF funding guidelines (Box 21) – is that while perfectly adequate for the sort of project-based capacity building activities envisaged under the newly established capacity-building frameworks, it is not of the sort required to pay for disaster relief activities which needs to be up front, available at a moment's notice, and 'demand driven.'

However, the Marrakech Accords also include decisions which may eventually involve a type of financing more akin to what might be required to overcome the disaster response funding problem, namely insurance. During the negotiation which led to the FCCC, Vanuatu (on behalf of AOSIS) submitted a proposal for an insurance mechanism to deal with countries vulnerable to sea-level rise. For some time, the only trace of this proposal in the language related to the Convention was the reference to

[170] Art. 7.(b)(vi).
[171] Art. 7.(b)(vii).
[172] Art. 7.(d).
[173] Art. 7.(c).
[174] http://unfccc.int/resource/docs/cop6secpart/05.pdf

Box 21: FCCC Funding

The Financial Mechanism: Article 11 FCCC

Art. 11.1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined.

Art.11.3. The Conference of the Parties and the entity or entities entrusted with the operation of the financial mechanism shall agree upon arrangements to give effect to the above paragraphs, which shall include the following: (a) Modalities to ensure that the funded projects to address climate change are in conformity with the policies, programme priorities and eligibility criteria established by the Conference of the Parties;

Art.11.5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

The Three Stages

The most significant COP action on adaptation is Decision 11/CP.1. This provides initial guidance to the GEF on the policies, programme priorities and eligibility criteria it should follow for Convention related matters. This decision envisages adaptation being undertaken in three sequential stages to deal with short, medium and long term strategies:

- Stage I: Planning. This covers studies to identify impacts of climate change, particularly vulnerable countries or regions and policy options for adaptation and capacity building.
- Stage II: For particularly vulnerable countries/regions identified at Stage I, measures, including capacity-building to prepare for adaptation, as envisaged in Article 4.1 (e).
- Stage III: Measure to facilitate adaptation, including insurance, and other adaptation measures as envisaged by Article 4.1 (b) and Article 4.4.

Decision 11/CP.1 makes clear that, for now, the Convention's financial mechanism will only fund Stage I measures undertaken as part of adaptation activities undertaken in the context of the formulation of national communications. Funding for Stage II and III will only be available if evidence from Stage I studies, the IPCC and other sources suggests such actions have become necessary. In this eventuality, Annex II Parties are to provide funding to implement such measure under their obligation under Article 4.3 and 4.4. In the case of Article 4.4, such funding may or may not flow through the Convention's financial mechanism.[Yamin (1998)]

The Bonn Funds

The Bonn Agreements and related decisions provide for the establishment of three new funds: a special climate change fund and a least developed countries fund under the Convention, and an adaptation fund under the Kyoto Protocol. All three funds will most certainly be managed by the entity which operates the financial mechanism of the Convention.

The special climate change fund will finance activities relating to climate change in the areas of adaptation; technology transfer; energy, transport, industry, agriculture, forestry and waste management; as well as activities to assist developing countries whose economies are highly dependent on income generated from fossil fuels in diversifying their economies. The least developed countries fund will support a work programme for LDCs. The adaptation fund, operating under the Kyoto Protocol, will be financed from the "share of the proceeds" on the clean development mechanism and other sources of funding. Several Annex II Parties have already pledged to collectively contribute US$410 million a year to the funds by 2005.

Source: http://unfccc.int/issues/convkpfunding.html

'insurance' in Art. 4.8.[175] However, at the 2001 Bonn session, the COP did decide 'to consider, at its eighth session (New Delhi, October 2002), the implementation of insurance-related actions to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change'.[176] While there

[175] Yamin (1998). See Proposal for an insurance mechanism submitted by Vanuatu on behalf of AOSIS, A/AC.237/WGII/CRP.8, 17 December 1991.
[176] Bonn Declaration.

might, in principle, be scope for interpreting 'disaster relief' as some sort of 'insurance-related action,' this does not appear to be the intended interpretation.[177] However, the fact that a functioning disaster relief system constitutes some form of insurance may suffice to 'house' eventual negotiation on a CIR-Fund under a more generally interpreted Article 4.8 'insurance' concept.

The Problem of International Coordination. The Guiding Principles to the framework for capacity-building in developing countries are rightly adamant that 'capacity-building must be country-driven, ... primarily to be undertaken by and in developing countries,'[178] and there is no doubt that this is the right approach, particularly in the case of 'regular' adaptive capacity-building measures and projects. However, in the specific case of emergency response, it would be ill-advised to rely solely on these regular adaptation measures whose fruition – as shown by the case of poverty alleviation – may take some time. Indeed, in light of the findings discussed in Chapter 7, it stands to reason that domestic emergency capacity building alone may not be sufficient to prevent climate-related disasters for some time to come, and consequently that the need for effective international emergency assistance will be with us for the foreseeable future. Given that weather-related natural disasters are occurring right now, and can be expected to continue to do so with increasing frequency and ferocity, there is an urgent need for disaster response capacity building at the *international* level, something not (yet) reflected in the decisions under the FCCC.

Why the Framework Convention on Climate Change? Having argued that impact response measures (including those pertaining to disaster relief) *do* fall within the remit of the Framework Convention and that the current provisions under the FCCC are insufficient to carry out the functions of the proposed Climate Impact Relief Fund, the question remains why such a fund should be established *under* the FCCC. The paramount reason for introducing such a fund is, of course, to create a more efficient international system for the relief of weather-related disasters. Yet this, by itself, is not necessarily sufficient for it to be established under the climate change regime. Given the climate change phenomenon in all its environmental and social complexities, there is indeed a danger of treating the international regime established to deal with the problem as a panacea for all the world's woes, with the effect of paralysing the whole regime. This is why the question why the proposed fund should be established under the FCCC is legitimate and needs to be addressed.

A necessary, albeit not necessarily sufficient, condition for anything to be covered by the FCCC would seem to be some more or less direct link to the phenomenon of anthropogenic climatic change. And the main purpose of Chapter 6 was to argue that for the funding of weather-related disaster relief efforts, such a tie is likely to exist already and is very likely to grow over the next decades. In the absence of the tools required to ascertain the 'anthropogenic proportion' of weather-related disaster impacts, we cannot rely on some quantitative criterion as to whether the tie in question

[177] The Initial National Communication of Antigua and Barbuda (May 2001), for example, recommends 'insurance initiatives to reduce vulnerability of properties'[p.38] and explains that 'hurricane force winds and rains prove to be destructive to most species of vegetables. In addition to the loss of actual crops, infrastructure, such as farm buildings, is often damaged. In the absence of crops insurance, which presently does not exist for the agricultural sector, complete or heavy crop losses make infrastructure replacement very difficult or impossible.' [45]

[178] Art 5.

is sufficiently strong to warrant a treatment under the FCCC.[179] However, there are some reasons for introducing the proposed fund within the framework of the climate change regime:

- There is arguably no climate change related issue which developing country policy makers will be more familiar and concerned about than the sort of emergencies to be covered by the CIR-Fund. The prospect of such a Fund could consequently significantly raise the interest of DC policy makers in the climate change regime.
- As an FCCC instrument, all FCCC Parties could be involved in establishing a disaster response regime with the proposed CIR-Fund, regardless of their stance to other FCCC instruments such as the Kyoto Protocol.
- In the same way in which the mitigation requirements and the flexibility mechanisms of the Kyoto Protocol managed to 'mainstream' the climate change issue not only in the thinking of environment but also of economic ministries/agencies, a CIR-Fund would mainstream climate change amongst the development community and donor agencies.

In short, introducing a CIR-Fund under the FCCC would not merely benefit disaster relief, it would considerably enhance the climate change regime by demonstrating the affluent Parties' commitment to take seriously the concerns of the developing world, to take a first step towards a more balanced regime and with it a first step in bridging the Great Divide diagnosed in the first part of this study.

Regular impact reduction measures – such as poverty alleviation – remain of crucial importance, but it would be extremely negligent to rely solely on their 100 percent timely success in preventing the very real near-time threat of further disastrous climate impacts. At the beginning of the twenty-first century, the time is right for the world to take a bold step towards a global solution. How better to live up to the call of the President of the Swiss Confederation[180] – the cradle of the Red Cross – to show that there is an acceptable face to globalisation than to take a first step towards an effective global climate impact response regime by way of introducing an FCCC Climate Impact Relief Fund?

[179] Otherwise we could, for example stipulate that the issue is to be treated under the FCCC if more than half of the relevant figures are clearly attributable to anthropogenic climatic changes.
[180] See Section 2.2.

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