

Climate Change and Human Security¹

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1. Introduction: Springtime for whom?

This spring in New York sees the UN Security Council about to break new ground by taking up the issue of climate change. How will changing climate patterns affect both inter-state relations and international and national security in a narrow, geo-strategic sense as well as the well-being and survival of human beings and humankind and thus human, water, health and livelihood security?

On 6 April 2007, the Intergovernmental Panel on Climate Change (IPCC) released the second part of its Fourth Assessment Report showing that the poor of this planet are most likely to suffer the worst effects of climate change. Human security takes on a broader meaning when one considers basic needs for food, water, health – in short, livelihood and a place to live – the issues addressed in the Millennium Development Goals.

Poor communities can be especially vulnerable, in particular those concentrated in high-risk areas. They tend to have more limited adaptive capacities, and are more dependent on climate-sensitive resources such as local water and food supplies (IPCC 2007: 9).²

Furthermore, within the larger category of ‘the poor’ lies the frequently invisible (including within that IPCC summary document) group: women. Worldwide, seventy percent of those living below the poverty line are women³ for whom climate change represents very specific threats to security. When the impacts of climate change are brought home, then women, in their roles as the primary managers of family, food, water and health, must deal very directly with the impacts.

While natural climate variations have existed for millennia, anthropogenic climate change has gradually emerged since the industrial revolution and especially after World War II due to the availability of cheap fossil fuels (coal, oil, natural gas) and the dramatic increase in its consumption first primarily in the industrialized countries but now increasingly also in the rapidly growing economies of the BRIC states (Brazil, Russia, India, China), especially of China and India.

¹ Simultaneously uploaded to **Radix - Radical Interpretations of Disaster**: <http://www.radixonline.org/cchs.html> & <http://www.radixonline.org/cchs.doc> ; **Disaster Diplomacy**: <http://www.disasterdiplomacy.org>; **Peace Research and European Security Studies (AFES-PRESS)**: <http://www.afes-press.de/html/topical.html> .Comments are most welcome.



(Source: Gustavo Wilches-Chaux)

2. Climate Change, Security and Conflicts

On 9 January 2004, David King, the UK Government's chief scientific adviser claimed that climate change is a far greater threat to the world than international terrorism.⁴ In February 2004, John Reid MP, then British Secretary of State for Defence and now Home Secretary, argued that climate change may spark conflict between nations. He forecast that violence and political conflict would become more likely in the next 20 to 30 years as climate change turned land into desert, melted ice fields and poisoned water supplies. He listed climate change alongside the major threats in future decades, including terrorism, demographic changes, global energy demand. "As we look beyond the next decade, we see uncertainty growing; uncertainty about the geopolitical and human consequences of climate change. ...Impacts such as flooding, melting permafrost and desertification could lead to loss of agricultural land, poisoning of water supplies and destruction of economic infrastructure. ...More than 300 million people in Africa currently lack access to safe water; climate change will worsen this dire situation."⁵ John Ashton, the UK Foreign Secretary's Special Representative for Climate Change, said at a conference on "Climate Change: The Global Security Impact", at the Royal United Services Institute on 24 January 2007: "There is every reason to believe that as the 21st century unfolds, the security story will be bound together with climate change."⁶ "Climate change is a security issue because if we don't deal with it, people will die and states will fail," Ashton concluded.

Ashton pointed out that defense and security planners must face a paradox when assessing their responses to the problem. Most security threats in today's world are amenable to some extent to a "hard power" or conventional reaction, he said, and demand will rise for such responses to climate change-related security problems. "But there is no hard power solution to climate change - you cannot force your neighbour to change its carbon emissions at the barrel of a gun."⁷

Sir Crispin Tickell, the former UK Permanent Representative to the UN, highlighted the environmental factors behind societal collapse. Professor John Mitchell, the chief scientist at the UK Met Office, forecast that the coming decades will see a 30 per cent increase in severe drought. He added that Africa will experience increased desertification, water stress and disease.⁸

Besides the UK, other nations have begun to assess the security implication of climate change. In 2002, the German Ministry for the Environment, Nature Conservation and Nuclear Safety published a commissioned report on climate change and conflicts raised the question whether climate change impacts can increase conflict potentials.⁹ In spring 2004 an internal report by Randall and Schwartz for the U.S. Department of Defense on the impact of Abrupt Climate Change on U.S. national security was leaked to the press.¹⁰

The British initiative during its Security Council Security Council presidency to put climate change on its agenda for 17 April 2007 has been the most recent attempt to “securitize” climate change in the context of geo-politics.¹¹

3. Climate Change as a Threat and Challenge to International, National and Human Security

Climate change poses many new threats and challenges to national security and international stability as well as to human security at other scales. The concept of human security was introduced first by UNDP in 1994¹² and then developed further in a report by the Human Security Commission, co-chaired by Sadako Ogata and Amartya Sen, in its report *Human Security Now* (2003).¹³ The environmental dimension of human security has been addressed by an international team working on Global Environmental Change and Human Security (GECHS) and in several studies by the United Nations University Institute for Environment and Human Security (UNU-EHS).¹⁴

In February 1999, during its presidency of the United Nations Security Council, Canada, a founding member of the Human Security Network, put human security on the agenda by addressing the impact of armed conflicts on human beings.¹⁵ In March 2005, then UN Secretary General, Kofi Annan, in his report *In Larger Freedom*¹⁶ wrote of human security in a broad sense, the issue was placed on the agenda of the UN General Assembly in the fall of 2005.

UNDP will take up the relationship between human development and climate change in its *Human Development Report 2007* (HDR), to be launched in November. Over 17 years, UNDP has incrementally developed a sensitive measure of human development (the human development index – HDI). Earlier studies have shown that the HDI correlates well with measures of disaster risk such as UNDP’s disaster risk index (DRI), especially for less developed countries.¹⁷ Preliminary analysis for this year’s HDR suggests that climate change poses major obstacles to progress in meeting MDGs and maintaining progress raising the HDI: “There is a clear and present danger that climate change will roll back human development for a large section of humanity, undermining international cooperation aimed at achieving the Millennium Development Goals (MDGs) in the process.”¹⁸

Concerning the MDGs individually, UNDP states:¹⁹

...[C]limate change may pose a threat to food security through erratic rainfall patterns and decreasing crop yields, contributing to increased hunger. Furthermore, adverse climate change impacts on natural systems and resources, infrastructure, and labor productivity may lead to reduced economic growth, exacerbating poverty. These effects threaten the achievement of MDG 1. Loss of livelihood assets, displacement and migration may lead to reduced access to education opportunities, thus hampering the realization of MDG 2. Depletion of natural resources and decreasing agricultural productivity may place additional burdens on womens’ health and reduce time for decision-making processes and income-generating activities, worsening gender equality and womens’ empowerment (MDG 3). Increased incidence of vector-borne diseases, increases in heat-related mortality, and declining quantity and quality of drinking water will lead to adverse health effects threatening the achievement of

MDGs 4,5,6 and 7. In general terms, the realization of MDG 7 may be jeopardized through climate change negatively impacting quality and productivity of natural resources and ecosystems, possibly irreversibly, threatening environmental sustainability. Climate change, a global phenomenon, calls for a collective response in the form of global partnerships (MDG 8

4. Thinking through Linkages between Climate Change and Security

There are at least seven ways that climate change is likely to affect security in its narrow and wider meanings. Some effects are already evident and will become very clear in the human and climatic short run (2007-2020). They will increase and others will manifest themselves in the medium term (2021-2050); whilst in the long run (2051-2100), they will all be active and interacting strongly with other major trends: the end of the petroleum economy for many producing and consuming nations, possible financial and economic crisis, a larger population of humans, and a much more urbanized humanity – far in excess of the 50% now living in small to very large cities. All these processes will be accompanied by redistribution of population nationally and internationally.²⁰ Such redistributions typically have significant gender dimensions; for example, extreme event impacts can lead to male out migration in search of work, culminating in an increase in women-headed households – a group often considered particularly vulnerable.²¹

Africa, in particular, is very likely to suffer very damaging impacts and at present commands the least resources for coping and adapting to these stresses. Therefore, many of the examples below come from Africa.

New studies confirm that Africa is one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity. Some adaptation to current climate variability is taking place, however, this may be insufficient for future changes in climate (IPCC 2007: 10).

These linkages are complex in many ways. To begin with, climate change involves the interactions of many systems such as the atmosphere, hydrosphere, cryosphere, and biosphere that are immensely complex in their own right. Thus, a recurrent theme in IPCC reports is the significance of thresholds and non-linearities. When human systems are added to the mix, complexity escalates.²² Livelihood security and other aspects of human security interact with geo-strategic (or “hard”) security issues because of the national and regional upheavals that climate stress may put on livelihood systems already vulnerable and incapable of adapting.²³ World wide the rural and urban poor are already under stress, and for some groups such as women headed households in Africa, adaptation to climate-induced stress will be very difficult indeed. As Simon points out, climate change has both intermittent but increasingly frequent, extreme impacts (such as large storms and heat waves) and slow on-set, pervasive, cumulative effects (such as extinction of life forms and sea level rise).²⁴ Both kinds of effects may have a role in displacing human populations and disrupting their livelihoods. Some major climate changes may actually occur rapidly.

Some efforts by state actors to mitigate and adapt to climate change may also further stress weak and marginal sections of the population such as indigenous groups and ethnic minorities, increasing discontent and alienation. In particular, large scale water management and forestry projects in the past have displaced such groups,²⁵ and without safeguards are likely to do so as states expand mega-projects as part of their national climate adaptation programs. One example is the new dams being built in Guatemala. Such intra-state tension and possible conflict over the distribution of winners and losers in climate adaptation may spillover into regional conflicts, on the basis of recent experience in Darfur. State actor adaptations may also weaken treaties such as regional water basin management and lead eventually to inter-state conflict. For example, Sudan’s decision to build a new dam on the Nile, could have that result.

One must also consider that the world around us in 2007 has in it a large number of weak and crisis-prone nation states.²⁶ It is not likely that such chronic instability will diminish (although details of the pattern may shift geographically) before severe impacts of climate change are felt.

Humanitarian intervention in the crises that are likely will become more difficult and run the danger of exacerbating conflict, especially as civilian humanitarian and military relations become more interwoven.²⁷

Figure 1 provides an overview of these complex interactions arranged on a time scale.

Figure 1: Matrix of Possible Climate Change/Security Interactions over Time

	Direct impact	Indirect Consequences					Slow-onset
	Water	Food	Health	Mega-projects	Disasters	Bio-fuel	Sea level
Short term (2007-2020)	Local conflict over water	Failure to meet MDGs	Failure to meet MDGs	Long history of development-induced displacement from 1950s	Nation states begin to lose credibility due to inability to prevent large disasters	Isolated food – fuel competition & price spikes	Small number of displacements
Medium term (2021-2050)	Increased local & some international conflict over water	Significant displacement due to famine	Interacts with food production problems	Displacement of rural poor due to CDM & large scale dams & other state based mitigation & adaptation projects	Significant political unrest due to failure of DRR & inadequate recovery in many countries	Food-fuel competition increases & biodiversity erosion	Increasing displacement & national/international tension
Long term (2051-2100)	Major international conflict over water	Major displacement & political upheaval	Major displacement due to epidemics	Major urban upheaval and other political fall out from mega-project displacement	Major upheaval with international implications due to unattended weather catastrophes	Major discontent due to food-fuel competition	Major international tensions due to population displacement
All of these processes strongly interact with each other							

5. Specific Linkages between Climate Change and Security

5.1 Food-Livelihood-Climate-Conflict

Food and livelihood pressure due to climate change will lead to populist and/or military coups in a number of countries. After the roll-out of macro-economic “structural adjustment” programs in Africa in the 1980s, one witnessed junior officers in a number of militaries seizing power in the name of workers and peasants who suffered (e.g. in Burkina Faso). This will produce continuing instability in Africa, in particular. Between 1980 and 2001 there were 95 attempted coups in Africa -- 33 of them successful. Popular discontent over livelihood security was a contributing cause of many of these.²⁸ The same pressures as well as the “push” provided by conflict will cause considerable population movements and displacement both within countries and internationally.²⁹ That, in turn, will increase insecurity – a process that is already occurring. Effects in Africa may include the following:

Agricultural production, including access to food, in many African countries and regions is projected to be severely compromised by climate variability and change. The area suitable for agriculture, the length of growing seasons and yield potential, particularly along the margins of semi-arid and arid areas, are expected to decrease. This would further adversely affect food security and exacerbate malnutrition in the continent.

Local food supplies are projected to be negatively affected by decreasing fisheries resources in large lakes due to rising water temperatures, which may be exacerbated by continued over-fishing. (IPCC 2007: 10).

Women are responsible for around 70 percent of household food production in sub-Saharan Africa, often on the basis of informal resource rights. Climate-induced changes in crop and livestock production could threaten those rights, as well as affect the gendered division of labor with negative effects on women's and men's incomes, livelihoods and household security.³⁰

The climate-food connection will not only affect the poor. In some industrial and industrializing nations, as climate change creates new patterns of food production -- new exporting and new importing zones -- access to supplies and the energy to import them may become strategic concerns and lead to international conflict.

5.2. Health-Climate-Livelihood-Conflict-Security

Health impacts of climate change including epidemics and insect outbreaks will have a similar effect, also compounding food and livelihood crises. This is beginning, but it will accelerate in the medium term. As we have seen with SARS and avian influenza, disease does not respect national boundaries in a globalized world. Changing climate may bring many epidemiological surprises as vector habitats change, sometimes quite rapidly.

Projected climate change-related exposures are likely to affect the health status of millions of people, particularly those with low adaptive capacity, through:

- *increases in malnutrition and consequent disorders, with implications for child growth and development;*
- *increased deaths, disease and injury due to heat waves, floods, storms, fires and droughts;*
- *the increased burden of diarrhoeal disease;*
- *the increased frequency of cardio-respiratory diseases due to higher concentrations of ground level ozone related to climate change; and,*
- *the altered spatial distribution of some infectious disease vectors.*

Climate change is expected to have some mixed effects, such as the decrease or increase of the range and transmission potential of malaria in Africa. IPCC, p. 9

5.3. Mitigation-Adaptation-Inequity-Conflict-Security

Adger et al. raise the issue of "fairness" in adaptation to climate change.³¹ Mega-projects conceived by nation states as solutions to climate change such as the planting of large scale forestry under the Kyoto Protocol's Clean Development Mechanism (CDM) and the building of more large dams and reservoirs, are beginning to displace other numbers of poor and marginal people, having effects on politics and stability similar to those mentioned above while negatively affecting biodiversity. In the medium term such mega-project investments -- already a major feature of rapid urban industrialization in China and India, the world's two most populous countries -- will grow rapidly as water shortages intensify. Already "an estimated 40–80 million people have been forcibly evicted from their lands to make way for dams."³²

The social and economic impacts of climate change focused mitigation projects have not yet been fully assessed. Skutsch, for example, highlights the absence of gender impact analysis of CDM projects.³³ The "clean, green" solution of nuclear energy so heavily promoted in the early years of this century and recently adopted as a climate change-fighting strategy by the EU and others has led to a planet-wide race to capture extractive rights and exploit uranium reserves. At this

writing, the historically high value of uranium has led to violent conflict in the Congo and the renewed use of forced labor. The profound, degenerative human health consequences of working and living in a toxic and radioactive environment are only recently being understood. Epidemics of cancer and other radiogenic health problems now prevalent in areas that hosted the Cold War nuclear machine are certain to expand.³⁴ In addition, a new phase in the growth of nuclear power could exacerbate the problem of “leakage” of weapons grade material into the hands of non-state actors.

5.4. Food-Fuel Conflict & Human Security

Large-scale investments in bio-fuels in the medium and long term as a substitute for green house gas-producing petro-based energy sources may have the perverse effect of taking considerable land out of food production and diverting food grains, thus raising food prices and eroding biodiversity. The maize (corn) price in Mexico has already increased because of demand for grain by US ethanol plants, and protests have resulted.³⁵ If this occurs, then food and livelihood pressures will increase and the desperation of many rural and urban people will increase national and regional insecurity. Rapid expansion of sugar production in Brazil and Africa palm in Colombia, as energy feed stocks, have been a major source of displacement of small farmers from their lands. Also, recent research has shown the energy and carbon efficiency of biofuel production to be variable and often lower than with the burning of fossil fuels.³⁶

5.5. Disaster-Livelihood-Governance-Conflict-Security

Also in the medium term livelihood security and hence the ability to govern will be undermined by the increasingly frequent occurrence of more and more mega-disasters such as those associated with hurricane Mitch (1998), the Orissa super-cyclone (1999), hurricanes Katrina and Rita, and tropical storm Stan (2005). Even now, the UN reports that over a million people are threatened by erratic weather in five southern African countries.³⁷ Such catastrophic weather events often produce cascades of secondary physical hazards such as landslides (as Nicaragua during Mitch or in Vargas, Venezuela in 1999) or downstream inundation when dams overflow or dam authorities release large volumes of water to safeguard large dams (as in Mozambique at present and in several recent years). They also trigger changes in social relations, including the exacerbation of unequal gender relations manifested in lack of land and property rights, and rising sexual and gender based violence towards women and girls.³⁸ In urban industrial landscapes such as greater New Orleans, Manila, or Osaka, storms and flooding often bring further complications by damage done to factories, storage facilities, and pipe lines. The resulting “natural-technological” (natech) hazards are very expensive to clean up and can have long term public health consequences.³⁹ Institutional systems for anticipating or even timely recognition of the “surprises” that natech hazards may present in the future are not yet been developed world wide.

Where extreme weather events become more intense and/or more frequent, the economic and social costs of those events will increase, and these increases will be substantial in the areas most directly affected. Climate change impacts spread from directly impacted areas and sectors to other areas and sectors through extensive and complex linkages (IPCC 2007:16).

Disasters, development, and conflict have been shown to have complex interactions with one other quite apart from the additional stresses and management challenges likely to accompany increasingly variable weather and more extreme storms.⁴⁰

5.6. Water-Conflict-Security

Much discussed (incorrectly) in the past as a population growth/ demand problem, water scarcity may, indeed, become a source of conflict and instability, but more as a function of supply.⁴¹ International regimes such as the Nile Treaty are old, inadequate, and fragile. Newer, more forward-looking treaty regimes, such as the Nile Basin Initiative, are still in their infancy and subject to similar divisive pressures despite the efforts of multilateral agencies like the World Bank.

The other tensions and sources of instability discussed above could also place international water management and sharing agreements under pressure. Management of many of the world's 261 international rivers will face severe tests.⁴² Furthermore, many coastal freshwater aquifers will suffer salinization as a result of sea level rise. In Africa alone:

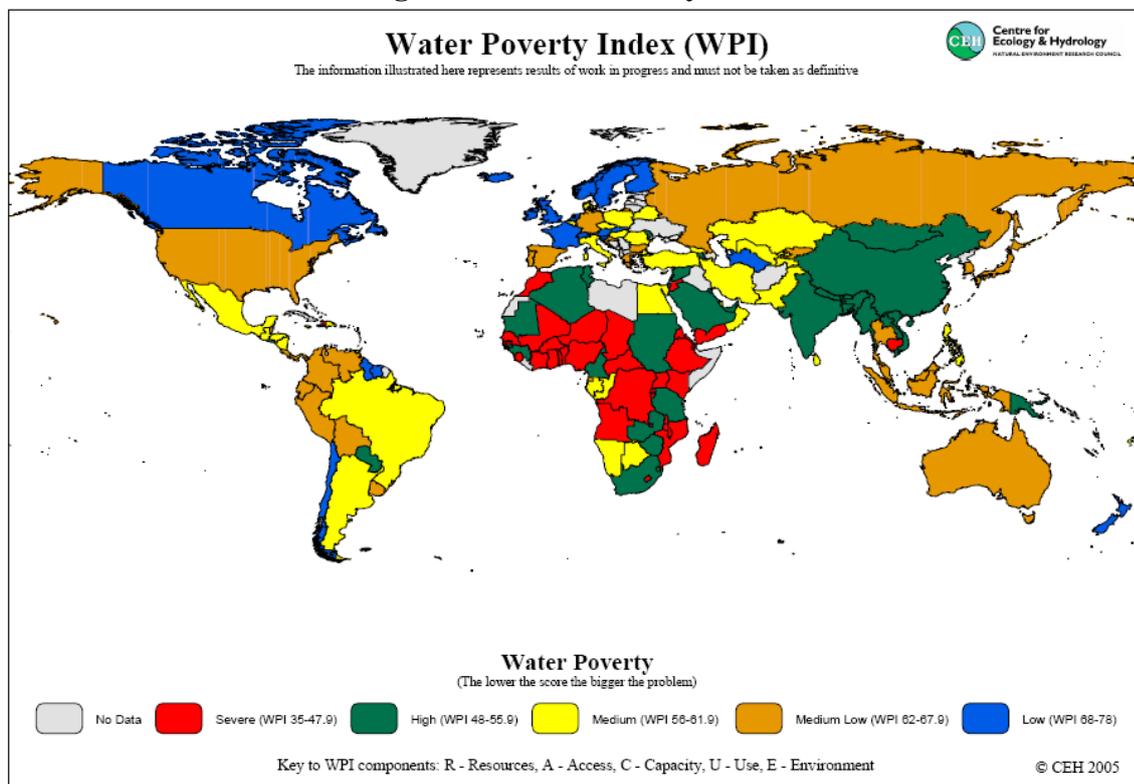
By 2020, between 75 and 250 million people are projected to be exposed to an increase of water stress due to climate change. If coupled with increased demand, this will adversely affect livelihoods and exacerbate water-related problems (IPCC 2007: 10).

A team at Keele University and the UK's Centre for Ecology and Hydrology has produced a water poverty index (WPI)⁴³ – Figure 2. Using the WPI they found that already in 2005 a large number of countries were suffering moderate, high, or severe stress. If this is the baseline situation, what will additional stress due to climate change do in many of these places?

5.6. Sea Level-Displacement-Security

Finally, sea level rise in the long term and its collateral impacts on river flow and ocean discharge regimes will cause displacement of many millions of people currently living in coastal areas. For the small island nations of the world, especially the many cultural groups living on coral atolls, entire nations face complete submersion. A recent study calculates that around 634 million people are living less than 10m above sea level. The study notes that “of the more than 180 countries with populations in the low-elevation coastal zone, about 70 percent have urban areas of more than five million people that extend into it.” The authors then list Tokyo, Japan; New York, U.S.; Mumbai, India; Shanghai, China; Jakarta, Indonesia; and Dhaka, Bangladesh.⁴⁴ One could add other cities as well to the list, for example, Cartagena, Colombia; Lima, Peru; Buenos Aires, Argentina; and Recife and Rio de Janeiro, Brazil. African exposure is high.

Figure 2: Water Poverty Index



Nigerian scholars Ibe and Awosika state: “This coastal zone consists of four major basins which are bordered on the ocean side by low-lying coastlines which are sandy and muddy in some cases. General beach elevations range from 2-3 m above sea level.”⁴⁵ Most of Africa’s major cities are coastal, including Dakar, Senegal; Accra, Ghana; Lagos, Nigeria; Luanda, Angola; Cape Town and Durban, South Africa; Maputo, Mozambique; Dar es Salaam, Tanzania; and Mombasa, Kenya; and Mogadishu, Somalia. The cost of dislocation – which will include salinisation of coastal aquifers and other low-lying fresh water resources - and loss of infrastructure will be difficult for poor countries to bear, especially in Africa.⁴⁶ The Intergovernmental Panel on Climate Change agrees.⁴⁷ Considerable political instability may result. Just considering Africa:

Towards the end of the 21st century, projected sea-level rise will affect low-lying coastal areas with large populations. The cost of adaptation could amount to at least 5-10% of GDP. Mangroves and coral reefs are projected to be further degraded, with additional consequences for fisheries and tourism. (IPCC 2007: 10).

Additional negative feedback can be anticipated as degradation of coastal wetland vegetation and coral reefs reduce or remove their protective influence in the face of storms.

6. Conclusion: No One is an Island (and We’re all “Islanders”)

Whether one is assessing the impact of climate change from the point of view of intrastate stability and interstate relations or with an eye to the Millennium Development Goals and the well-being, dignity and aspirations of the poor and marginalized of humanity, the challenges are clear. It is also clear that “No man is an island”, a thought poet John Donne contributed to the collective consciousness of Westerners. Equally true is the fundamental, epiphantic insight of many eastern belief systems, in one formulation (in the *Upanishads*): “Thou art that” [*Tat Tvam Asi*] – a profound affirmation of inter-subjectivity, quite apart from its possible metaphysical meanings. In more mundane terms, we are “all in the same boat”. Thus not only must rich countries and wealthy people in those countries cut back on consumption, they must help, support, promote -- and not impede -- the rest of the world in adapting to a planetary system that is rapidly changing. A timely and adequately funded combination of adaptation and mitigation efforts needs to be encouraged. Adaptation strategies should take account of impacts on all stakeholders, consciously including women, indigenous groups, and ethnic minorities while also drawing from local knowledge and past experiences with coping with climate variability and extreme events.

We -- rich and poor -- all are going to be “islanders” or *costeños* [coastal dwellers], one way or another. Living far from sea level is not going to keep anyone safe from climate change effects, including the indirect effects of the raising sea level.

Ironically, climate change offers humanity an opportunity for a quantum leap in sustainable development and in peace making. If international cooperation (as opposed to competition) is strengthened in response to the seven kinds of threats discussed, international stability, governance, and development can also benefit. This thought recalls the quotation from UNDP above, regarding MDG 8: “*Climate change, a global phenomenon, calls for a collective response in the form of global partnerships.*”⁴⁸

For several years many researchers and institutions have been arguing that sustainable development and disaster risk reduction share the same agenda and are interdependent.⁴⁹ Advances in meeting the Millennium Development Goals and in dealing creatively with unplanned urban growth, land degradation, inefficient use of water and energy will not only have immediate, short term benefits but also make livelihoods and nations more resilient in the face of the impacts of climate change. Greater resilience will, in turn, act as insurance against loss of development investments due to extreme natural events.

7. Endnotes

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- ² Quotations from the IPCC rely on “Working Group II Contribution to the Intergovernmental Panel on Climate Change, Fourth Assessment Report Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability, Summary for Policymakers, 6 April 2007 <http://www.ipcc.ch/SPM6avr07.pdf> .
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- ¹⁴ For GECHS see <http://www.gechs.org/> ; Janos Bogardi and Hans Guenter Brauch (2005) “Global Environmental Change: A Challenge for Human Security – Defining and conceptualising the environmental dimension of human security”, In: Andreas Rechkemmer, ed. *UNEO – Towards an International Environment*, pp. 85-109. Nomos: Baden-Baden. GECHS will also be holding a conference on the mainstreaming of human security, “The International Conference on Human Security in Asia: Theory, Practice and Impacts will be held in Bangkok, October 4-5 2007 <http://www.ids.polsci.chula.ac.th/humansecurity.htm> .
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