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CLIMATE CHANGE AND SECURITY:

ADAPTING THE DISCUSSION TO THE EVIDENCE

GGI Briefing Paper 1/2012

March 2012

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Summary

The linkages between climate change and security are high on the political agenda of international security bodies of the United Nations, the European Union and NATO. Recent scientific evidence shows that climate change will continue to increase the frequency and intensity of extreme weather events such as the storms and flooding that recently devastated Pakistan and Thailand, and of droughts like that which emaciated millions on the Horn of Africa in 2011. In contrast to the strong scientific support for a direct causal relationship between climate change and individual human security, the relationship between changing environmental conditions and violent conflict remains largely ambiguous and lacks adequate empirical evidence.

This Global Governance Institute Briefing Paper argues that policymakers globally should work to address these proven, and urgent, human security implications of climate change, rather than its unclear implications on violent conflict. In this vein, GGI recommends particularly that Parties to the United Nations Framework Convention on Climate Change: step up societal adaptation and resilience programs; urgently finalize work on the Green Climate Fund to provide sufficient resources to vulnerable populations in developing countries; and complete and implement National Adaptation Plans in developing countries to ensure financial resources are used effectively.

GGI Briefing Paper Series

Environment & Sustainable Development Section

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March 2012

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Introduction

Although single natural disasters cannot be directly attributed to climate change, numerous examples of extreme weather events over recent years provide support for the Intergovernmental Panel on Climate Change (IPCC) November 2011 analysis and predictions that climate change increases extreme weather events, underlining that rising temperatures potentially have dire consequences for human livelihoods (IPCC 2011). The 2010 heat wave in Russia claimed tens of thousands of lives and is considered the most intense heat wave ever recorded in that region (Dole et al. 2011). The Indus flood in Pakistan the same year was one of the greatest floods in recent history, affecting over 14 million people and claiming between 1,300 and 1,600 lives (Gaurav et al. 2011). In Africa, there is yet another food crisis looming in the Sahel, as erratic rainfall over the last year produced a poor harvest and threatens people across Chad, Niger, Burkina Faso, Mali and Mauritania (Guardian 2011).

Because these global increases in incidences of extreme weather events are in line with scientific predictions of the effects of anthropogenic climate change, a portion of the damages and loss of life associated with such disasters can realistically be attributed to increased intensity of natural disasters caused by climate change. However, the security implications of climate change are often regarded as a hypothetical threat rather than an actual problem. The reason for this perception is that much of the discourse on climate security still focuses on identifying the potential linkages between climate change and violent conflict. Although important in the long run, this focus risks diverting attention from the implications

that climate change has on human security.¹

The latest report of the IPCC forecasts that due to climate change, the frequency and intensity of many extreme weather events will increase considerably (IPCC 2011). For example, the report finds a 90-100% chance the world will see increased length, frequency, and intensity of heat waves, and a 66-100% chance of increases in heavy precipitation (ibid: 11). The potentially adverse effects of such weather events, for example on public health and food supplies, are particularly serious in developing countries (ibid). Against this background, this analysis is primarily concerned with highlighting the impact of climate change on the security of vulnerable livelihoods and outlining policy action needed to increase resilience² of vulnerable populations, primarily via strengthening the capacity of societies to cope with extreme weather.

This GGI briefing paper argues that comprehensive policy responses to the threats raised by climate change require a clear distinction between those security implications observable today (extreme weather events) and those that need further exploration (violent conflict). This differentiation acknowledges that responses to security threats posed by climate change are needed now, while further research is needed to clarify whether and how climate change relates to violent conflict. Consequently, GGI feels

¹ As defined by the United Nations Development Programme, human security comprises economic, food, health, environmental, personal, community, and political security issues (UNDP 1994). It is meant to capture the security of individuals, rather than nation states.

² Resilience is defined in this paper as two distinct attributes of a socio-ecological system: the ability of the system to absorb shocks without fundamentally changing state, and the degree to which the system is capable of self-organization (Klein et al. 2004).

the focus of decision-makers working on climate security should be on addressing challenges that are currently threatening livelihoods.

Climate Change is endangering human security today

For the first time, in November 2011, the IPCC presented a comprehensive scientific analysis of the ways in which climate change affects extreme weather events. The findings of the report suggest that as a consequence of natural climate variability and manmade climate change, extreme weather events such as storms, droughts, floods and heavy rainfall are increasing in number, power, and scope. This trend is accompanied by increasing economic losses associated with natural disasters, as people and their economic assets are increasingly concentrated in locations particularly vulnerable to extreme weather (IPCC 2011).

As the costs of individual disasters increase, the drawbacks for the global economy become more severe. The October 2011 floods in Thailand caused immediate cost of \$40 billion, but are estimated to have set back global industrial production by 2.5% (J.P. Morgan 2011). As a consequence of strongly integrated economies and dependencies on outside supplies, especially in developing countries, the number of people affected by natural disasters grows well beyond those that experience extreme weather on site.

The human face of these disasters is of course an even more compelling ground for concern. The World Food Programme reported in 2010 that flooding in Pakistan left six million people homeless and devastated national agricultural production, which dropped by an estimated 10-15% (WFP 2010, CFR 2010). In 2011-2012, drought on the Horn of Africa left 13.3 million people in need of humanitarian

assistance at its height, and in February 2012 this number remained at 2.3 million, with 325,000 of these being malnourished children (UN New Centre 2012). The occurrence of these events are not of course, limited to developing countries. A heat wave in France in 2003 killed over 14,000 people and affected energy production in the country; and another heat wave led to drought in Russia in 2010 resulting in food export bans, which in turn affected global food prices (IPCC 2011). The physical severity of these events is only one metric in the equation of how people are affected by them. Whether and how extreme events affect people depends on the specific ability of populations in various socio-economic and socio-ecological contexts to absorb these events' adverse effects. This includes their capacity to self-organize and the degree to which they can learn and adapt to the challenges (Carpenter et al. 2001). Considering that missing or inadequate infrastructural and administrative capacities in many urban and rural areas of the developing world render their inhabitants vulnerable to unexpected and extreme climatic events, climate change has to be recognized as a serious threat to human security.

Connections between climate change and violent conflict are less clear

Many policy-makers, media outlets, and members of the public are genuinely concerned about climate change increasing the likelihood of violent conflict. Evidence to support these fears however, is largely lacking (Gleditsch 2012).

Those concerned about climate change and violent conflict assume that, because climate change alters the availability and accessibility of resources all over the world (for example by increasing droughts or melting ice caps) new lines of conflict may emerge. Examples cited include cases in

Asia, where tensions are indeed rising over the distribution of water resources between China and the Indian subcontinent, and between China and the Mekong Delta countries. India, for example, is increasingly building dams on the Indus river to provide for its growing energy needs, causing concerns at its downstream neighbour Pakistan, which receives 80% of its irrigation water from the Indus (The Economist 2011).

Despite these examples, it has proven difficult to find meaningful empirical evidence for the assumption that climate change is a significant determinant of violent conflict.³ There is little consensus about theoretical frameworks, methodologies and research priorities in the climate change and security literature (Deligiannis 2012). While some potential pathways, such as the impact of heavy precipitation on violent conflict, receive increasing attention, the effect of sea level rise and other consequences of climate change on conflict have not been systematically addressed. The dominant conclusion of studies exploring the impact of climate change on violent conflict is that there is little if any evidence for interstate conflict over water resources and that factors other than those attributed to climate change are generally more important determinants (Gleditsch 2012: 7).

Further research is undoubtedly required in this area but even if results begin to show that climate may impact potential for violent conflict, it is not climate change itself that leads to conflict, but rather the

³ Only one peer-reviewed academic study to date has illustrated a clear empirical relationship between climate cycles and violent conflict. It suggests that the arrival of El Niño doubles the risk of armed civil conflict in tropical countries around the world (Hasiang et al. 2011). Although the study finds a correlation between the two events, it says nothing about why or how climate change was responsible.

lack of human security climate change creates (by: altering access to water and fertility of land; increasing dangerous weather events; etc.). It is for this reason that attention to “water wars” and other climate related conflicts in policy spheres and in the media are sending both the wrong message about the actions required to deal with climate related security threats (that Europe and the USA need to bolster boarder protection against climate migrants, and vulnerable countries need to increase military spending to deal with impending violence) and the wrong message about the urgency of the security problem (that it will happen in some distant future, maybe). These messages directly contradict the clear and urgent messages on human security that have the full backing of the scientific and development cooperation communities.

Policy dialogue be based on observable human security impacts

Given the discrepancy between the implications of climate change for human security, which are observable and scientifically proven, and the implications for violent conflict, which are ambiguous and lack substantial empirical evidence, response strategies should focus on those aspects that we know of. This requires first and foremost strengthening the resilience and adaptation capacities of developing countries.

While many details of causality between climate change and security may require further exploration, it is clear that developing countries will be most affected by climate change. The IPCC finds that overall, economic losses from weather- and climate-related disasters have already increased globally, but that developing countries have suffered disproportionately. This holds true in particular for the loss of life, as more than 95% of deaths from natural disasters occur in developing

countries. Moreover, economic losses relative to GDP are also higher in developing countries (IPCC 2011: 7). According to the Climate Risk Index, an annual measure of the extent to which individual countries have been affected by weather-related human and economic losses, all of the ten most affected countries between 1991-2010 were developing countries (Germanwatch 2011). The individual results for the ten most affected countries are shown in Table 1.

Table 1. Long term climate risk index. Results (annual averages) in specific indicators in the 10 countries most affected in 1991-2010.				
	Country	Death Toll	Losses per Unit GDP	Total No. of Events
1	Bangladesh	7,814	1.56	251
2	Myanmar	7,130	1.68	33
3	Honduras	327	2.93	56
4	Nicaragua	159	1.90	43
5	Haiti	340	1.12	51
6	Viet Nam	445	1.19	40
7	Dominican Republic	211	0.37	44
8	Pakistan	558	0.66	144
9	Korea, PDR	74	3.61	33
10	Philippines	801	0.30	270

(Germanwatch 2011: 6)

The vulnerability of developing countries, as indicated by the IPCC and in the Climate Risk Index, is an urgent call for action. Responding to the human security implications of climate change essentially means strengthening capacities of developing countries to cope with extreme weather

events. These efforts have to take place predominantly at the local level. Above all, cities and communities need effective administrative structures, robust infrastructure and a diversified economy that does not critically depend on climate-sensitive sectors. These tasks require

enormous financial resources. In 2010, the World Bank estimated that the annual global costs of adaptation to climate change range from \$70-100 billion (World Bank 2010).

Promising developments in setting up effective financial mechanisms that provide those resources give reason for hope. At UNFCCC COP 15 in Copenhagen, governments pledged that the Green Climate Fund for mitigation and adaptation measures would be equipped with \$30 billion by the end of 2012 and will annually distribute \$100 billion by 2020. At COP 17 in Durban, important steps were taken to further institutionalize the fund. Just days after the conference, the Interim Secretariat of the Green Climate Fund called on governments to nominate their candidates for the principal governing body by the end of March 2012. The first meeting of the Board, whose membership is divided equally between developed and developing nations, is expected to be held on April 30th, 2012 (UNFCCC 2011). The permanent location of the fund, which is currently annexed to the UNFCCC in Bonn, is yet to be determined. If properly financed, the Green Climate Fund has the potential to provide essential financial resources for adaptation measures in developing countries. Pledging an additional €40 million for fast track financing for the years 2012-2013, Germany has demonstrated that political will exists and that resources are, albeit slowly, being made available (BMU 2011).

In order to decrease vulnerability to climate change in developing countries, mainstreaming adaptation and resilience improvement into development cooperation is a requirement. Financial mechanisms to do just that are becoming increasingly operational, with the Strategic Climate Fund, that aims to “climate-proof” development programs, having received \$1.2 billion by November of 2011. The fund finances, among other things, the

Pilot Programme for Climate Resilience, which supports low-carbon and climate resilient development. Since 2009, the Kyoto Protocol Adaptation Fund, initially proposed in 2001 at COP 7 in Marrakech, is financing adaptation projects in developing countries. Although equipped with significantly lower financial capabilities than the Green Climate Fund, the Adaptation Fund has the potential to be particularly effective as participating countries can directly access funding through approved national institutions. If these and similar programs are further strengthened, developing countries will be able to mitigate at least some of the most dire human security implications of climate change.

Conclusion and Recommendations

In contrast to the strong scientific support for a direct causal relationship between climate change and human security, a relationship between changing environmental conditions and violent conflict remains largely ambiguous and lacks adequate empirical evidence (Gleditsch 2012). For this reason, the Global Governance Institute recommends that member states to the UNFCCC address the security implications of climate change by strengthening adaptation and resilience capabilities of vulnerable populations around the globe, and in developing countries in particular.

Industrialized countries need to step up efforts to provide sufficient, and sufficiently accessible, financial resources for climate change adaptation. Governments of developed countries should submit financial contributions for fast track financing of the Green Climate fund before the first meeting of the Board on April 30th, 2012.

The Board of the Green Climate Fund should authorize the World Bank to serve

as a trustee of the Fund. Many developing countries and civil society groups are sceptical about using the structures of the World Bank for the administration of the Fund, as they perceive the Bank to be dominated by western interests. However, without the administrative capacities of the World Bank, too much effort would go into building effective distributional structures, undermining the actual purpose of the Fund.

It is recommended that the Green Climate Fund's Private Sector Facility support private climate adaptation investments in the developing world. Most importantly, this means mitigating the risk of investing in countries that may not have traditionally "investment grade" business environments. A strong focus should be put on strengthening the role of local private sector actors, for example by investing in public-private partnerships.

To guarantee sustainable financing for global adaptation and mitigation efforts, GGI recommends that the Green Climate Fund be allowed to draw on financial resources generated by other climate-related economic instruments such as emission trading schemes. GGI calls on member states of the EU to lead by example in this regard and provide funding to the Green Climate Fund through the EU Emission Trading Scheme. A good example to follow is the Adaptation Fund, which can access 2% of the shares of the Certified Emission Reduction Units under the Clean Development Mechanism (Adaptation Fund 2011).

Developing countries, in their turn, need to present robust National Adaptation Plans (NAPs) that lay out clear strategies of how to achieve stronger adaptation and resilience capabilities. Member states need to carefully adhere the guidelines for the formulation of NAPs, decided in Durban, and report back to the UNFCCC as soon as possible. The substantial financial

resources available through the Green Climate Fund can only be effective if they are matched by rigorous national adaptation strategies.

Options need to be explored to include communities, cities and local governments more systematically in efforts to strengthen societal resilience and adaptation. This requires establishing channels that allow local actors to access funding from international climate change adaptation funds. The system of accreditation for National Implementing Entities of the Adaptation Fund provides a good example of this (Adaptation Fund 2011). In collaboration with civil society organizations and the private sector, cities should be able to finance information campaigns on community-based Disaster Risk Reduction programmes that raise awareness on how to prepare for natural disasters.

Finally, increased resources need to be made available to study the relationship between climate change and conflict. A thorough understanding of potential pathways of climate change to conflict is immensely important to both forecasting and preventing future climate-fed conflict.

References

Adaptation Fund (2011): Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund. Available at: <http://www.adaptation-fund.org/sites/default/files/OPG%20Revised%209.15.11%20%28with%20annexes%29.pdf>

BMU (2011): Statement of the German Federal Minister of the Environment, Nature Conservation and Nuclear Safety Dr. Norbert Röttgen. High Level Segment of the UNFCCC 2011 COP 17 and CMP 7. Durban, December 7th, 2011. Available at:

http://www.bmu.de/english/climate/climate_conferences/17th_conference_durban/doc/48122.php

Carpenter, S.R., Walker, B.H., Anderies, J.M., and N. Abel (2001): From Metaphor to Measurement: Resilience of What to What? *Ecosystems* 4:765-781.

Council on Foreign Relations (2010): The Costs of Pakistan's Floods. Analysis Brief. August 10th, 2010. Available at: <http://www.cfr.org/pakistan/costs-pakistans-floods/p22784>

Deligiannis, T. (2012): The Evolution of Environment-Conflict Research: Towards a Livelihood Framework. *Global Environmental Politics* 12(1): 78-100.

Dole, R., Hoerling, M., Perlwitz, J., Eischeid, J., Pegion, P., Zhang, T., Quan, X., Xu, T. and D. Murray (2011). Was there a basis for anticipating the 2010 Russian heat wave? *Geophysical Research Letters* 38(6).

Gaurav, K., Sinha, R. and P.K.Panda (2011): The Indus flood of 2010 in Pakistan: a perspective analysis using remote sensing data. *Natural Hazards* 59(3): 1815-1826.

Germanwatch (2011): Global Climate Risk Index 2012. Weather-related loss events and their impacts on countries in 2010 and 1991 to 2010. Available at: <http://www.germanwatch.org/klima/crri.htm>

Gleditsch, N.P. (2012): Whither the weather? Climate change and conflict. *Journal of Peace Research* 49(1): 3-9.

Guardian (2011): Sahel's looming food crisis could be forestalled, claim aid agencies. By Celeste Hicks. December 15th, 2011. Available at:

<http://www.guardian.co.uk/global-development/2011/dec/15/sahel-food-crisis-can-be-forestalled>

Hsiang, S.M., Meng K.C., and M.A. Cane (2011): Civil Conflicts are associated with the global climate. *Nature*, 476, 438-441.

Intergovernmental Panel on Climate Change (2011): Summary for Policy Makers on the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. November 18th, 2011. Available at: http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-SPM_Approved-HiRes_opt.pdf

J.P. Morgan (2011): Global Data Watch. Economic Research, November 11th, 2011. Available at: <https://www.adr.com/Home/LoadPDF?CMSID=2c3de19feb2943fd982284c56c16b176>

Klein, R.J.T., Nicholls R., and F. Thomalla (2004): Resilience to natural hazards: How useful is this concept? *Environmental Hazards* 5(2003) 35-45.

The Economist (2011): South Asia's water: Unquenchable thirst. November 19th, 2011. Available at:

<http://www.economist.com/node/21538687>
United Nations Development Programme (1994): Human Development Report 1994. Oxford University Press: New York.

United Nations Framework Convention on Climate Change (2011): Message to Parties Launching the Green Climate Fund. December 21st, 2011. Available at: http://unfccc.int/files/parties_and_observers/notifications/application/pdf/111222_gcf_notification.pdf

UN News Centre (2012). UN says Somali famine over, but warns action needed to forestall new crisis. Available at:

<http://www.un.org/apps/news/story.asp?NewsID=41133&Cr=somalia&Cr1=famine>

World Bank (2010): The Cost to Developing Countries of Adapting to Climate Change: New Methods and Estimates. Washington, DC: World Bank

World Food Programme (2010): WFP Battling To Reach Pakistan Flood Victims. Press Release. August 17th, 2010. Available at: <http://www.wfp.org/stories/wfp-boosts-pakistan-flood-aid>