

Scoping Paper — Tipping Points in Humanitarian Crises

Summer Academy on Social Vulnerability 2009

I. Introduction

This scoping paper is the outcome of the 4th Munich Re Foundation/UNU-EHS Summer Academy on Social Vulnerability that dealt with “Tipping Points in Humanitarian Crises”, July 26th to August 1st, 2009 in Hohenkammer, Germany. The aim of this Academy was to explore tipping points of climate change related to humanitarian crises and to promote their assessment both within the scientific and political communities, in particular with respect to the assessments and recommendations developed by the IPCC.

II. Principle

The effects of climate change on the complex socio-biophysical system have the potential to trigger humanitarian crises, the linkages between which are inadequately understood. Humanitarian crises themselves have dramatic negative impacts at all levels of society. Work on the complexity of the biophysical system has shown the conceptual value of tipping points in explaining systemic changes as a result of a combination of small and large perturbations. Given the complexity of the socio-biophysical system there is potential value in applying the concept of tipping points to explain the onset of humanitarian crises.

III. Rationale

The value of invoking the concept of tipping point is that it may allow for the management of small perturbations in the system with negative impacts, thereby allowing for the prevention and/or better management of humanitarian crises. Within humanitarian crises there is also a need to consider issues of equity and vulnerability by focusing on, among others, differentials such as age, gender, income, and resource access, as these may also constitute pre-conditions for tipping points. The complexity already referred to and the potential for unexpected events has major implications on decision-making and power relations. Thus, a review of such processes may enable better decision-making and allow for more effective interventions.

Key Concepts and Terms

The conceptual terms ‘tipping points’ and ‘humanitarian crisis’ are used currently to describe multiple phenomena. These terms are thus ambiguous and therefore arbitrary and value laden.

This paper introduces the concept of a ‘hot system’ as unit of analysis rather than a geographic delimitation as is implied in “hotspots”. This new concept aims at focusing

research on the relationship(s) between and within biophysical and social processes so as to understand the manner in which a combination of events in biophysical and social systems might result in a humanitarian crisis. 'A 'hot system' will likely be characterized by the interplay of dynamic overlapping vulnerabilities (e.g. poverty, unstable political and economic contexts, and limited livelihood opportunities) and exposure to hazards in the context of a changing climate.

Feedbacks are an important concept in the discussion of tipping points. They describe a process by which these overlapping effects accumulate and reinforce or magnify each other to push a system over a tipping point. Because feedback can lead a series of small effects or events to have an unexpected and disproportionately large impact, it often results in uncertain and unforeseeable outcomes. Furthermore, because the magnitude of the impact may be much larger than the inputs that cause it, it may, for all practical purposes, become impossible to reverse. Finally, biophysical and social interactions across scales could cause a localized crisis to trigger similar shifts and crises beyond its immediate boundaries.

While there is a substantial body of evidence on the existence of social vulnerability of specific regions and populations, as well as vulnerability to hazards and climate change, little information exists about how compounded social vulnerability and exposure to hazards and the impacts of climate change lead to (humanitarian) crises. In particular, while multiple general examples of complex interrelations between social systems and biophysical systems that lead to humanitarian crisis exist in the literature, the detailed functioning of overlapping effects, feedback, surprise, irreversibility, and cross-scale interactions is mostly unexamined. This "black box" of unexamined complex interrelations needs to be acknowledged and explored.

IV. Assessment Strategy

The key to successful intervention and preparedness strategies that prevent climate change-stressed systems from tipping into humanitarian crises is strategic, dynamic, and multi-dimensional assessment. These assessments can be used to determine appropriate entry and intervening points to anticipating, and preparing for what otherwise would have been a surprise event.

Research for increasing adaptive capacity at various assessment scales is required, as prominently outlined by Adger (2003) and the Fourth Assessment Report (IPCC, 2007). Scaling is critical to this process for various reasons, including: a) scaling up preparedness and intervention studies as a means of climate protection, b) bringing local specifics into a global context and vice versa, c) scaling baseline vulnerability assessments and linking future scenarios to present conditions, and d) scaling across temporal and spatial dimensions.

A review of vulnerability assessments will help identify entry points for preparedness and required interventions. It will also help identify the levels and type of stakeholders who would be responsible for preparedness and interventions.

A meta-analysis of existing vulnerability indexes would be useful for establishing baselines of current social and biophysical vulnerability. These indexes would provide frameworks for assessing the relative vulnerabilities of populations. A new rigorous vulnerability index to identify hot systems could be created by selecting and integrating

the existing methods that are most reflective of the needs and conditions of vulnerable populations, thereby potentially creating novel and innovative methodologies. The dynamic nature of vulnerability means that the baseline must not be considered static, and should be updated as new data becomes available. Continual reassessment allows the tracking of change trajectories and reclassification of vulnerable populations.

Use of the above-mentioned approaches requires working within existing data sources and amongst stakeholders working in the field of biophysical and social issues. This goes hand in hand with filling data gaps from relevant research institutes, NGOs and international and governmental agencies. This will help identify the most vulnerable populations now and in the future in order for decision makers to respond with appropriate interventions to reduce humanitarian crisis.

Future scenarios of vulnerability can be created using climate change stimuli (e.g. changes in temperature and precipitation means and variability) that are based on current information and scenario-driven climate models. When implementing new interventions it is necessary to conduct scenario analyses to gain understanding of the possible impacts on populations. Scenario-based interventions must employ a historical approach in assessing population-level decision-making processes and the influence that institutional policies have on similar past events.

Within vulnerability assessments, special attention should focus on elements of vulnerability including but not limited to; age, gender, income, as well as access to, and availability of, resources. Recommended strategies in the analysis of these differentials attend to aspects of quality, quantity, and scale. Of particular concern is attention to context specificity. Increasing the level of local participation is one critical factor for obtaining equity indicators that promote overall equity, understood as equal access to resources and opportunities. Another need is to address the barriers, such as those related to gender, that impede equity and risk reduction. Gender sensitive data is imperative because it is often inadequately reflected in assessment strategies.

Vulnerability assessment requires both quantitative and qualitative data. Quantitative data may include census data, Human Development Index (HDI), Gender Development Index (GDI), social capital through network analysis, and institutional analysis tools. Qualitative data may be collected using methods that include community based participatory research, Participatory Rural Assessment (PRA), workshops on equity, and narratives. Assessments of biophysical entities include stocktaking of ecosystem services, and trends in these services. This can enhance the understanding of distribution, accessibility, entitlement, equity and how these impact livelihoods. Due to a lack of case studies that globally scope potential hotspots (i.e. geographically explicit), methods for generalizing existing case studies to characterize similar regions can be implemented and advanced.

Given the extreme potential for human vulnerability, extreme events have the potential to affect how various stakeholders and institutions hold each other accountable for the causes of humanitarian crises. The IPCC needs to support research on decision-making, governance processes and accountability, as well as gather existing evidence on the way climatic and non-climatic shocks have changed structures of accountability in the past.

V. Conclusion and Recommendation

- It is advisable the IPCC to undertake a review of literature which traces the use of the term 'tipping point', in both the social and natural sciences, and which documents the different phenomena it has been used to define.
- We recommend that the IPCC contact the major actors working on and in humanitarian crises in order to document and collate different definitions of what constitutes humanitarian crises and the degree to which these definitions are context specific. From this, the IPCC should seek to collate case studies that explore the occurrence of humanitarian crises in an attempt to disentangle the connections in the interrelated social and biophysical sub-components that together form the "hot system".
- Because social systems are vulnerable to minor biophysical and social changes, we suggest that the IPCC increase interaction with social scientists, by consulting, for example, with NGOs, and INGOs who have expertise of the interplay between biophysical and social systems.
- In light of the complexity and surprise made clear through the conceptual emphasis on tipping points, we recommend that the IPCC seek to develop innovative, interdisciplinary methods and approaches to understanding/assessing vulnerability through a review of the existing and ongoing work on preparedness, social vulnerability, and interventions.
- We recommend that the IPCC convene a workshop on the potential for upscaling context specific, local findings on the evolution of humanitarian crises to regional/global levels.