



IHDP Open Meeting 2009

7th International
Science Conference on the
Human Dimensions of
Global Environmental Change

26-30 April 2009
World Conference Center Bonn
UN Campus
Bonn, Germany

The Social
Challenges of
Global Change

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Time: Monday 27 April, 14:00 - 15:30. Session: A090

As the World Churns: Environmental Migration and Population Displacements (I)

Location: Bundesrat, Plenarsaal

Convenors: Alison Barbieri and Alex de Sherbinin, Columbia University, United States

Impacts of Climate Change on Population Migration and Vulnerability: Analysis of Scenarios for the Brazil's Northeast

Presenter: Alisson Barbieri, Federal University of Minas Gerais, Brazil

Authors: Alisson Barbieri (1), Edson Domingues (1), Bernardo Queiroz (1), Ricardo Ruiz (1), José Carvalho (1), José Rigotti (2)

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This paper combines efforts of major Brazilian research institutions investigating the impacts of climate change. It investigates the impacts of climate change, up to 2050 and for the Brazil's Northeast region, a) on major economic sectors and on migration, and b) on socioeconomic and vulnerability scenarios. An economic-demographic model combining Population Projection Models and a Computational General Equilibrium Model creates state- and municipal-level population and economic scenarios which define the structural conditions from which migration decisions are made. Next, this model is compared to an economic-demographic-climate model which includes the projected changes in temperature and precipitation in Brazil. The difference between the two models gives the impacts of climate change on major economic sectors and on migration. Then, the paper assesses the consequences of migration by analyzing socioeconomic and vulnerability differentials between migrants and non-migrants (based upon projected scenarios of education, income and welfare, housing conditions, water supply and demand, sanitation), as well as projected pressures on urban infrastructure. Finally, the paper discusses how the effects of climate change on the viability of economic activities (particularly small-scale agriculture), depletion of natural resources (particularly water), population change (with increasing rural-urban and urban-urban migration), and future scenarios which may increase the vulnerability of some groups living in urban areas (particularly migrants) can be factored-in to Brazilian public policy on health, migration and development, helping prompt strong and early action in terms of creation or adaptation of institutional settings at different scales



Population Displacements Associated with Environmentally Significant Infrastructure Projects

Presenter: Alex de Sherbinin, Columbia University, United States

Authors: Alex de Sherbinin (1), Marcia Castro (1)

CIESIN, Columbia University, Palisades, New York, United States (1), Department of Population and International Health, Harvard School of Public Health, Cambridge, Mass., United States (2)

There is a continued investment in large infrastructure projects in developing countries, ranging from large dams and transportation infrastructure to water transfer schemes and irrigation systems. Recent examples include the Three Gorges Dam in China, the Narmada Valley Development Plan (NVDP) in India, and the Initiative for the Integration of Regional Infrastructure in South America (IIRSA). Past projects were often justified by their perceived contribution to economic development, but future projects are likely to be driven more and more by projected climate change impacts and the need for adaptive measures. These projects almost by definition result in major environmental alterations that displace large populations. These large projects are also frequently located on lands occupied by the world's most disadvantaged people. Forced resettlement of entire communities is a common feature. Taking a case study approach, this paper addresses how the environmental repercussions of these projects may impact population dynamics in the affected areas, as people are either displaced by, or relocate to be near, major projects. Implicit in this is a recognition that there may be winners and losers in these population displacements, with some gaining from the availability of new water management or transport infrastructure, while others possibly lose their lands and livelihoods. The paper addresses the issue of forced displacements and mechanisms of population resettlement. The paper also examines how resulting population movements promote even further environmental change in neighboring areas, as a result of both unplanned resettlement to new areas and need for additional local services.

Environmentally Induced Population Displacements

Presenter: Susana Beatriz Adamo, Columbia University, United States

Authors: Susana Beatriz Adamo (1)

CIESIN, Columbia University, Palisades, New York, United States (1)

There has been a growing literature on people displaced by land loss, land degradation, or natural disasters -the so-called "environmental refugees"-- however there is still no wide agreement on what constitutes an environmentally induced displacement, nor are there statistics available to assess the magnitude of the phenomenon. However, the identification of environmentally displaced people as migrants or refugees is one of the major discussions in the migration and environment literature because of its potential political and policy implications.

This paper will examine the evidence for significant population displacements from areas deemed to be environmentally degraded or excessively hazard-prone. It will also examine evidence for migration out of metropolitan areas or industrial zones owing to air pollution or health concerns. We will in particular focus on the type and demographic features of these migratory streams: family or individual moves, age and sex profile of migrants, social and economic characteristics, probability of return, length of stay at the destination, etc. Finally, the paper will examine potential future population displacements as a result of climate change, in particular changes in rainfall



patterns and sea-level rise, which some have claimed will dwarf all contemporary population movements.

Crosscutting Challenges of Climate Change, Internal Displacement and Environmental Degradation in Africa

Presenter: Delali Dovie, University of Ghana, Ghana

Authors: Delali Dovie (1)

University of Ghana, Legon, Accra, Ghana (1), Witwatersrand University, Johannesburg, South Africa (2)

Growth, development and government policies and adaptation to social and environmental shocks are important yet neglected causes of internal human displacement in Africa. The result is often internal refugees vulnerable to social and environmental changes in own localities. In South Africa, the impacts of apartheid are still being felt not only in aspects of limited resources but also the coupling impacts of population density, climate change events, and changes to biodiversity and land degradation. Based on a study of the former “Homelands” of South Africa, the links between the human-biophysical environment, shocks and internal adaptation are explored. Households with limited livelihood portfolios were severely affected by the outcomes of environmental shocks, and eliciting conflicts in resource use as households frequently depended on biological resources from the natural environment. Four categories of stresses were identified as, acute (e.g. rain floods), recurring (drought, livestock losses), chronic (mostly socioeconomic), and intermittent stress (e.g. wild fires). Drought was the most singular important stress because it devastated biological sources of livelihood. Internal displacement, food insecurity and environmental change issues therefore cannot be treated in isolation of the natural environment and the identities of the exposure units and interventions. These issues required a cross-scale understanding that led to a model, “Vulnerability Identity Matrix” (VIM). The VIM informs external interventions of realistic development activities and institutional adaptation. The VIM is defined as the shifts in boundaries and heterogeneity of vulnerability or adaptive capacity of exposure units to an environmental stress and interventions elicited.