Institute for International Economic Policy (IIEP)
Climate Change Adaptation in Low-Income Countries: Overview

Climate models indicate that impacts of climate change will be most severe in areas where a majority of the world's extreme poor live, particularly in sub-Saharan Africa and in parts of South Asia. Therefore, research is needed to better understand the nature of these impacts and their repercussions. This research can assist developing country governments and donor agencies to mitigate the impacts on poor communities and can influence and contribute to constructive responses. Research can help identify steps that households, communities and firms can take and policies required to facilitate such adaptations to climate change in resource-poor contexts.

IIEP achieved a milestone with its international conference on May 18 and 19, 2011 on the Economics of Adaptation to Climate Change in Low-income Countries. The conference featured frontier research and policy analysis over two full days, reinforcing GW's place among leading universities globally on this critically important subject. The conference was undertaken in partnership with the World Bank (Development Research Group) and the United Nations Development Program (Environment and Energy Group - Global Environmental Finance Team).

IIEP faculty are preparing a special issue of the refereed journal *Climate Change Economics*, which will feature key research contributions from our recent conference. A full conference proceedings volume, emphasizing policy dimensions, is in process in conjunction with the United Nations Development Program (UNDP).

Professors Arun Malik and Stephen Smith lead IIEP's research in this field, in conjunction with colleagues including Profs Nicholas Vonortas, James Foster, and Chao Wei. Our work focuses primarily on "autonomous adaptation" by firms, households, and communities acting on their own in response to climate change. Autonomous adaptation is influenced by planned (or policy-based) adaptation. Appropriate autonomous adaptation may be hampered by distorted incentives associated with existing government policies, imperfect information, financial obstacles, or other market failures. Less impoverished households and nations are better able to adapt, and hence analysis of climate-resilient development is a priority. Autonomous adaptation issues that IIEP is examining through this initiative include:
- interactions between autonomous adaptation and planned adaptation
- creating incentives for appropriate/ appropriately-timed autonomous adaptation
- disseminating information about uncertain climate change and adaptation options
- the role and impediments of credit and insurance markets to facilitate adaptation
- autonomous adaptation by poor households and impacts of adaptation on poverty
- positive and negative spillovers (externalities) of autonomous adaptation

The role of government is crucial; and opportunities exist to help policymakers cope with uncertainties associated with climate change when formulating policies for climate-resilient development. The uncertainties range from those that can be captured in traditional statistical terms, i.e., with information on possible outcomes and their probabilities, to those where the range of outcomes is not known with any confidence. Among the topics being examined are alternative decision-making frameworks given the range of uncertainties, and applications to policymaking.

Further support will enable IIEP to build on this work and explore the critical area of climate-resilient development that stresses relationships between poverty and climate change, and other forms of environmental degradation that can exacerbate climate change impacts. IIEP's climate work is connected to our poverty initiative focusing on low-income countries, vulnerability, and ultra-poverty: http://www.gwu.edu/~iiep/poverty/index.cfm. We are developing a framework for analyzing autonomous adaptation by households and communities as a problem of responding to uncertainty regarding climate change with decisions (including investments) that enable flexibility as more information is revealed over time. IIEP's climate work is also connected with our poverty initiative focusing on low-income countries, vulnerability, and ultra-poverty. Climate change exacerbates problems of uncertainty for farmers, particularly smalholders, by extending beyond traditional risk assessment, because probability distributions for climate change outcomes are unknown. Autonomous adaptation extends to adaptation through markets and through basic local governance mechanisms as well as responses of agricultural households.

There are two major foci of IIEP's current research plans in this field, which would be strengthened by external funding. The first is on interrelationships between planned (or policy) adaptation and autonomous adaptation; a two-page IIEP program prospectus on this research area is available upon request. The second area explores spillover effects (externalities) of autonomous adaptation, including such negative effects as lowering the water table of neighboring villages, and such positive effects as social learning; a six-page concept paper on this topic is available upon request. Both of these areas have had limited or no systematic research attention but offer high payoffs for policy formulation and implementation.

Also to be systematically explored are relationships between mitigation and autonomous adaptation in low-income countries. We are studying low-income country opportunities to gain carbon and similar credits – a form of adaptation in an international economics context. Disproportionate benefits have gone to middle income countries, notably China. But potential exists for other initiatives that benefit low income countries, beginning with credits for mangroves, reforestation, and agricultural practices, and exploring new opportunities.

Finally, IIEP's research program lays foundations for understanding security implications of climate change and responses to it in low-income countries; and the scope for anticipating and preventing resulting threats including civil conflict among different groups within a country, failed states, cross-border conflict, revolts against the government, or terrorism. The work points to the importance of: improving real time data and accurate forecasting about climate stress (related to IIEP's work on poverty forecasting); anticipating out-migration from climate-stressed areas both within countries and across borders; addressing deficiencies of public goods provision and governance; understanding impacts of diverting scarce water resources to cities or irrigated districts; reforming policies that threaten forest areas on which vulnerable populations depend; and strengthening the quality of policy responses to food insecurity.