

# Call for Research Proposals

## Assessing local vulnerability to climate change in Latin America and the Caribbean (LAC)

**(RG-T1872)**

The Inter-American Development Bank (IDB) is inviting research proposals for studies on selected issues in assessing local vulnerability to climate change in Latin America and the Caribbean (LAC).

### 1. Motivation

The Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as "the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes" (IPCC, 2007). From the socio-economic perspective, vulnerability to climate impact is a result of how sensitive a system<sup>1</sup> is to environmental hazards, and how effectively the affected people can act to reduce the detrimental effect of the structural change in climate, thus adapting to it. Depending on the attributes of the affected communities and sectors and magnitude of climate impact, the extent of exposure and sensitivity to climate impact differs greatly.

The empirical evidence suggests that relative success in reducing vulnerability and increasing adaptive capacity differs from case to case<sup>2</sup>. Even neighboring communities may respond differently to climate variability as their information, ethical codes and abilities to develop and implement appropriate strategies can vary. However, there is common set of

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<sup>1</sup> For purposes of this call for research proposals, system is defined as a group of interacting, interrelated, or interdependent elements, which can be people, firms, communities, and economic sectors.

<sup>2</sup> Reducing vulnerability means, in this context, undertaking ex ante measures to reduce impacts of climate shocks, and increasing adaptive capacity means increasing capacity to cope with a shock ex post.

information that would allow for this heterogeneity to be synthesized and helps in the development of indicators.

Vulnerability indicators have been used extensively in interdisciplinary research to evaluate the degree to which a socio-economic and environmental system suffers from climate change. Most of these indicators have been constructed at the national level with only some emphasis at the sector level. These “metrics” of vulnerability are usually based on top-down approaches and are derived from simulation studies of economic loss from climate impacts on bio-physical conditions of the environment. They are useful when comparing vulnerability at the country level, but lack applicability and persuasiveness for practitioners when planning interventions at the regional or local level. More systematized information is needed to examine the possibility of identifying a set of indicators that aggregates and conveys information about climate change impact on a specific system, and the capacity of the system to mitigate effects of climate shocks when they occur (mitigation capacity).

Researchers have focused on the national level with only some emphasis on the sector level. Measures of global vulnerability to climate change may be influenced by international agreements and policies and may not adequately reflect the reality on the ground. Although national or international policies may in general facilitate or restrict adaptation, most adaptive responses will be made at the local level by resource managers, municipal planners, and individuals. Furthermore, conclusions regarding vulnerability at an aggregated level —national or international— may hinder successful adaptation activities and policies since they often ignore the importance of scale dependency of vulnerability.

Certain standardized measures need to be developed at the system level<sup>3</sup> to allow for better evaluation and comparison so that new lessons can be learnt on how to reduce vulnerability in a sustainable way. The proposed research projects attempt to satisfy the need for a unified socio-economic perspective to provide both quantitative and qualitative information on vulnerability to climate impact at the system level, and to provide

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<sup>3</sup> For purposes of this call for research proposals, the term “system level” refers to the level of the analysis that the proposal is to perform (e.g. sector level or community level).

operational tools for practitioners on how to increase adaptive capacity of the different assessed systems.

Furthermore, the project aims to provide the tools and build the respective capacity of local communities to understand and evaluate their specific vulnerability to climate change and find their own solutions on how to become more resilient.

## 2. Objective

The objective of this research is to develop a project specific methodology that can characterize, analyze and assess vulnerability to climate change within IDB projects. The research seeks to identify a set of indicators that can systematically convey information to practitioners regarding project vulnerability drivers and the means required to build “adaptive capacity” at the project level.

The proposed indicators will be applied to specific IDB projects in agriculture, technology adaptation, land reform, forestry, irrigation and water & sanitation in order to increase adaptive capacity in their respective sector and location. These indicators should capture varied contexts but that are general enough to be applicable in other IDB projects.

A list of IDB projects has been identified (see Appendix), and the proposals should focus on at least **two projects** from that list. The IDB projects selected by the consultants could be related, but should result in the development of a different set of indicators. If a proposal is focusing on projects in the same sector, they should explain how resulting indicators are different.

## 3. Scope and Analytical Framework

Following the definition of vulnerability to climate change by IPCC (2007), each of the research studies should account for relevant information on the three critical components of vulnerability, namely **exposure, sensitivity and adaptive capacity**. In addition, the studies should have in consideration the three factors which are critical in order to correctly measure and monitor vulnerability, which are scale, dynamics, and diversity of the local units of analysis. With this, the studies should capture the diverse

natural environments and heterogeneous socio-economic structures at multiple scales which are usually not taken into account in aggregated vulnerability indices. The following paragraphs briefly describe the importance of these three factors:

**Scale.** Many recent vulnerability studies state that the vulnerability assessment depends critically on the scale of analysis. The vulnerability assessment at the local scale becomes very important not only because of the bio-physical environmental difference of locations, but also because of the socio-economic contextual differences at the local level. For example, even if we attempt to measure vulnerability to a climate hazard (i.e. flood), heterogeneity of locations even within a country or specific regions is often responsible for differential response (i.e. coping capability) to that hazard. Furthermore, within a country or region, heterogeneity of socio-economic contexts such as institutions, population, social network and culture, may affect the “local” vulnerability to climate change (Adger 1999; Carina and Keskitalo, 2008; Engle and Lemos, 2010).

**Dynamics.** Vulnerability assessment requires a dynamic point of view (Liu et al., 2008; Eriksen and Silva, 2009; Frank et al., 2011). However, global scale vulnerability studies that use static proxy variables such as annual GDP may ignore the dynamically changing coping capability at the local scale over a period of time. That is why there is a need to assess vulnerability in the short, medium and long term. In that sense, individual perception and accumulated knowledge of climate change that evolves over time results from learning through the past experiences of household’s response to climate change, their attitudes, values, culture and norms. In fact, it has been shown from the number of behavioral studies that individual awareness is one of the critical factors that determine local vulnerability. For empirical studies, it is important to characterize individual awareness in a continuously changing environment in an adverse manner.

**Diversity.** While some indicators such as communal governance structure, age distribution of population, access to external resources, and sources of income are important for assessing vulnerability regardless of the sector, other indicators might be very particular for

each individual sector. By focusing on micro level unit of analysis such as household or community ecosystem, it becomes feasible to capture the diversity of the natural environment of communities and their socio economic heterogeneity (Adger et al., 2005; Schroter et al., 2005; Flint and Luloff, 2005; Ziervogel et al., 2006; Acosta-Michliketal., 2008). By considering these general influencing factors of vulnerability, each research study will come up with sector-specific vulnerability indicators as required for monitoring the success of the planned adaptation projects in reducing vulnerability and increasing adaptive capacity. The research projects should take into consideration global vulnerability indices which have been proposed so far for international comparison at the system level, and account for any the shortcomings of global indices for local and sector levels. They should also use as reference case studies of local response and government interventions to the impacts of climate change in specific sectors, and how those climate impacts and the according responses could possibly be measured with quantitative and qualitative indicators. A list of potential references is provided at the end of this proposal.

#### 4. Proposal Submission

Researchers (**Individuals Only**) interested in submitting a proposal, please **send** the following documentation to Leonardo Sanchez ([lsancheza@iadb.org](mailto:lsancheza@iadb.org)):

- A technical proposal that includes: i) A detailed description of the system to be evaluated based on project documents; ii) A detailed description of the methodologies and empirical strategies to be used.<sup>4</sup>
- A budget proposal, indicating the time and resources that will be used within the context of the research work plan. **The proposal and corresponding budget must be sent in separate files**. The budget proposed should disaggregate items financed by the IDB contribution and those financed by the researchers. The budget should distinguish among amounts assigned to professional honoraria and other major

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<sup>4</sup> The bibliography of this call for proposals lists several references for the empirical strategies used in the literature. Proposals that include multiple countries/interventions and use of geo-referenced data to develop maps are encouraged.

categories of research expenditures.

- The name and Curricula vitae (three pages maximum per researcher) of the research leader and other researchers involved. The research team should demonstrate its ability to meet the objectives of the project, including relevant experience. Please note that subsequent substitutions for researchers originally specified in the proposal may be made with prior approval from the project coordinators, but the research leader (of each sub-project) should lead the entire project until its full completion.
- Proposals should be **no more than 10 pages long** (excluding CVs and references), in 12-Calibri font and 1-inch margins.

***Note: Research proposals must be submitted in English***

The final number of proposals accepted will depend on the quality and the proposed budget of the proposals received. Proposed budgets will be evaluated taking into account the scope of work proposed. Project proposals that seek extra funding to complement financing by institutions are strongly encouraged.

All papers and reports produced under this Project will be considered background material for an IDB report on “Assessing local vulnerability to climate change”. Studies that are of good quality will be considered for publication as working papers. A selection of the best papers may be included in a special issue of an academic journal or in an edited volume. Proposals may include suggestions for further dissemination of the final version of the paper.

## **5. Coordination and Schedule of Activities**

The proposals will be evaluated by a Selection Committee composed of a team of experts from the IDB as well as the overall coordinator of the project. The overall coordinator of the project will be the Climate Change and Sustainability Division (CCS) with the support from

the Research Department (RES), the Rural Development Disaster Risk management Division (RND), and the Water and Sanitation Division (WSA). Teleconferences and/or videoconferences will be set up with each selected team to gauge each team's progress until the project is complete.

- **October 1, 2013, 24:00** (Eastern Standard Time): Due date for receiving **proposals**.
- **October 4, 2013, 24:00** (Eastern Standard Time): Announcement of **selected research proposals**.
- **November 22, 2013** (or earlier): Delivery of **preliminary version of the research papers**.
- **December 2-3, 2013**: Discussion **Seminar** (location Washington DC) to discuss drafts of research papers
- **February 14, 2014** (or earlier): Delivery of **final drafts**. Final payment is contingent upon the approval of the final research paper, and on the delivery of this paper according to specific requirements outlined in the Manual of Style of the Research Network. The team will provide full access to the data used for verification and replication purposes.

## 6. Financial Aspects

The IDB will provide the equivalent in local currency of **up to US\$ 25,000** to each selected proposal. The exact amount will depend on the complexity, quality, originality, publication potential and policy implications of the proposal as well as on budget constraints. An **additional amount of up to US\$ 20,000 may be provided** for purposes of data collection and analysis (including surveys), among others.

The **approved amount** will depend on the quality of technical proposal and the researchers' qualifications and experience.

The payment schedule is as follows:

- Thirty percent (30%) **within 30 days** of signing the formal agreement between the IDB and the research leader.
- Thirty five percent (35%) **within 30 days** of presenting and approving the preliminary version of the research paper.
- Thirty five percent (35%) **upon approval by the Bank of the final research paper and data delivery**. This final payment is also contingent on the presentation of the research paper according to specific requirements outlined in the Manual of Style of the IDB.

## 7. References

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## 8. Additional References

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### **Coastal Zones**

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## 9. Appendix: IDB Projects

### Agriculture

HA-L1074	Institutional Strengthening and Reform of the Agriculture Sector
NI-L1067	Sustainable Agricultural Productivity Development Program
DR-L1054	Research and Agricultural Development Program
BR-L1152	Development Program for the Southwest Region of the State of Tocantins
BO-L1021	National Irrigation Program with a Watershed Approach
EC-L1071	National System for Rural Land Information and Management
AR-L1067	Forest Sustainability and Competitiveness Program

### Water

ME-L1050	Sustainability of Water Supply and Sanitation Services in Rural Communities III
GY-L1036	Linden Water Supply Rehabilitation Program
VE-L1030	Support for Rural and Small Town Water Supply Systems - Phase II
PR-L1060	Water and Sanitation Program for the Chaco Reg and interm cities in the eastern
BO-L1065	Water and Sanitation Program for Small Localities and Rural Communities
PE-L1107	Proposal for a Loan for the Second Generation Sanitation Sector Reform Program
TT-L1018	WASA Modernization and Wastewater Infrastructure Rehabilitation Program
UR-L1063	Montevideo Sanitation Program (PSU IV) Supplementary Financing
AR-L1122	Water and Sanitation for the Buenos Aires Metropolitan Area
BH-L1028	WSC Support Program - New Providence Water Supply and Sanitation Systems Upgrade
JA-L1035	Kingston Metropolitan Area (KMA) Water Supply Improvement Programme
BR-L1282	Environmental Sanitation Program for Municípios in the Guanabara Bay Area
PE-L1060	Cajamarquilla, Nievería y Cerro Camote - Expansion of water and sanitation
UR-L1069	Drainage and Environmental Sanitation
BR-L1297	Social and Environmental Program for the Igarapés in Manaus - PROSAMIM III

These projects can be found at: <http://www.iadb.org/en/projects/projects,1229.html>