

## **Climate Variability and Change in the Agricultural and Health Sectors: Research Approach and Experiences of the IRI**

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Decision makers (including those who develop policies) working in the public and private sectors of developing countries, typically confront the pressure to act in response to problems that require immediate action. Moreover, the effect of such actions must also be evident during the usually short terms in which those decision makers operate. Consequently, they often assign relatively low priority to issues that deal with the longer term such as climate change. Very frequently the scientific community approaches the research on climate change and its impacts on societies by proposing climate scenarios expected for the next few decades. Although this approach has been very helpful to raise the awareness of the general public on the climate change issue, it has also placed it as a problem that will affect societies in a timeframe that is far beyond the one in which policy makers and decision makers operate. We therefore propose that “Climate Change” must be introduced in the agendas of decision makers (including policy makers) as an issue of the present, as opposed to a concern for future generations.

On the other hand some of the most important expected impacts of climate change on societies are the ones caused by the anticipated increase in climate variability, including more frequent and more damaging extreme events. Consequently, at the International Research Institute for Climate and Society (IRI) we propose that an effective manner for assisting stakeholders to be prepared and adapt to possible climate change scenarios is by helping them to better cope with current climate variability. This requires the establishment of climate-related risk assessment and risk management strategies (as opposed to crisis management), including the identification of practices that are better adapted to cope with climate variability, as well as transferring risks associated to climate variability (e.g. with insurance programs).

A clear advantage of this approach is that it provides immediate assistance to the public and private sector: while it helps stakeholders to confront possible future climate scenarios, it assists them to manage the existing climate variability that is currently affecting societies. Furthermore, the impacts of the taken actions are also evident and verifiable in the immediate term making them more attractive to policy makers and decision makers.

Developing effective adaptive practices to climate change requires multidisciplinary (and often multinational) research teams as well as active stakeholder engagement. An ideal model for conducting this type of work includes the consolidation of international, multidisciplinary teams that allow using the holistic approach required to study the impacts of and adaptation to climate change and climate variability.

Regarding the needed stakeholder engagement, societies have become concerned with the general issue of “climate change” and its impacts. However, the concepts of climate change, climate variability, El Niño, are very often confused and misunderstood. Effective engagement of stakeholders must include activities oriented to clarify these concepts.

Furthermore, although actual decisions are made by individuals, they typically rely upon the advice and/or are affected by the actions of government agencies, private consultants/organizations, research institutions, etc. As a result, the most common situation found in any social sector (agriculture, health, emergencies, etc.) is a process of managed decisions based on formal and informal networks, as opposed to individual decisions. Consequently, an initial step required for successful stakeholder engagement consists of understanding the existing institutional map of the social sector in which activities will be established, and building upon the existing formal and informal networks.

A common limitation of research oriented to establish climate-related risk assessment and risk management strategies is that stakeholders are incorporated after the objectives have been defined and activities have been initiated. A crucial lesson learned in our work on adaptation to climate change and climate variability is that stakeholders must be engaged at the very beginning of the project development. Objectives, target groups, methodologies and communication strategies must be discussed and defined in a participatory process that must include both, researchers and stakeholders.

Successful stakeholder engagement is also facilitated by developing sets of “discussion-support tools” (linking simulation models, climate scenarios, decision support systems) that can be used to jointly explore options for reducing the impacts of expected climate change and climate variability scenarios with government advisors, policy makers, and in general with decision makers acting in the public and private sectors of societies.

Finally, stakeholder engagement can also be promoted and strengthened by establishing participatory pilot studies to for example: (a) demonstrate the ability of the mentioned “discussion-support tools” for exploring adaptive measures, and (b) study the potential of policies and financial tools (such as insurance programs and conditioned credit programs) to improve adaptation and reduce the social vulnerability to climate change.

The presentation will describe some of the work on the impacts of climate variability and change on the agricultural and health sectors that the IRI has been conducting in different regions of the world. Specifically, it will discuss: (a) incorporating “climate knowledge” in decision making in the agricultural and health sectors; (b) different approaches to develop possible climate change scenarios (e.g., expected climate for the 2050’s, 2080’s versus the next 10-20 years); (c) tools for simulating the expected impacts of climate variability and change on agriculture and health (statistical models, process-based models); and (d) format for presenting the results that are easily understood and usable for decision makers.