

## Decision Making and Climate Change Uncertainty: Setting the Foundations for Informed and Consistent Strategic Decisions

By Carolina Zambrano-Barragán, Climate Change Advisor, Government of Quito

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**Question Two: How can we balance today's pressing needs with long term risks?** How can public officials, especially in low income countries, address today's short- term pressing needs while preparing for tomorrow's climate-related impacts and surprises?

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Uncertainty is not new in decision-making processes. Societies have historically managed probabilities and scenarios when building new infrastructure, managing energy supplies, and investing in new technologies and markets, among other areas. Policy-makers in the developing world now face the challenge of accounting for a new source of uncertainty: that related to the impacts of climate change and of the outcomes of the strategies proposed to adapt to them.

Making sound decisions under uncertainty requires that public officials apply a non-traditional approach, one that leaves behind the ideas of permanence, stability, and absolute options, and considers dynamic planning processes. Based on personal experience as a decision-maker in Ecuador, this article proposes a framework for defining and consolidating climate change adaptation strategies and

processes that can help policy-makers address today's short- term pressing needs while preparing for tomorrow's climate-related impacts. The approach presented will not eliminate uncertainty about climate change impacts and potential solutions, but it can provide the basis for informed and consistent strategic decisions. While conceiving adaptation as a process, it is based on: i) establishing a flexible socio-institutional framework; ii) building and managing key information and knowledge; iii) keeping a portfolio of options; and, iv) periodically monitoring and evaluating outcomes and changes.

### **Adaptation as a process and its relationship with development**

Adaptation is profoundly intertwined with development. Climate change poses a unique challenge for the development of poor and vulnerable countries and peoples. Simultaneously, measures and policies that tackle poverty and inequality help build adaptive capacity and resilience of communities, reducing their vulnerability to the current and future impacts of climate change. Given this strong relationship, adaptation needs to be an essential part of national and local development plans, and joint initiatives between the climate change and development communities are essential (Bapna *et al.* 2009; McGray *et al.* 2007; Tschakert and Dietrich 2010).

Actions to address climate change and development have to be complementary and reinforce one another. While this is apparent in several cases, decision-makers often face complicated choices when prioritizing some adaptation actions over others. This is particularly true for measures that imply trade-offs across geographical, cultural, social and temporal scales, and calls for policy frameworks that can better meet development and environmental needs while addressing climate-related impacts.

In order to meet current and future challenges, adaptation strategies need to be conceived as learning, adaptive processes. They do not consist of a set of specific, sometimes competing, short or long-term decisions or interventions; rather, adaptation is a continuous effort that evolves with the appearance of new information and conditions, as well as through reviewing and learning. In this context, the establishment of socio-institutional frameworks that allow for active management of adaptation is crucial. Below are some recommendations for consolidating this type of framework and making strategic decisions under uncertainty.

## **1. Establish a flexible socio-institutional framework and set the basis for decision-making in the future**

- In order to establish the foundations for a climate-resilient, equitable future, public officials need to take a leadership role in consolidating processes of change that extend beyond their term of office. This is particularly true for climate change policy and management, since its impacts are of a short, medium and long-term nature, and institutions have no previous experience with it. Climate change management offers a unique opportunity for innovation in decision-making tools, strategies, and mechanisms that can allow for its mainstreaming in sectoral and geographical strategic plans and programs. Based on multi-stakeholder articulation, policy-makers with a holistic, on-the-ground view can establish the institutional frameworks and the dynamic planning processes required to promote resilience and adaptation while creating new opportunities for change.

When shaping processes for national climate change policy-making, decision-makers should consider a series of elements:

### **a. Institutionalization of climate change**

Climate change management has not necessarily been institutionalized in developing countries and cities. The inclusion of adaptation and mitigation in annual operative plans and budget allocations is perhaps the most important step a government must take in preparation for current and future climate-related impacts. This will only result from the recognition of funding needs at the highest political level, so that proactive measures can be implemented through timely use of administrative and technical resources. Resource allocation must be complemented by other actions at the institutional level: i) the appointment of official national institutions that can coordinate and lead the implementation of climate change action plans and programs, guarantee their continuity, as well as find new resources and cooperation; and ii) the establishment of mechanisms for inter-institutional and inter-sectoral articulation, such as national climate change committees, where key institutions, like national finance, planning and economic ministries, are involved.

### **b. Building and strengthening institutional capacities**

Since climate change uncertainty is relatively new for decision-makers, building capacities to cope with it is a key action for adaptation (McGray et al. 2007). Through specific capacity-development activities, public officials at different levels

and sectors need to learn how to apply cumulative probability tools (Magrin 2010), conceive adaptation as a process, and recognize the factors and connections that relate poverty to vulnerability, adaptive capacity and resilience. There is also need for the consolidation of stable research and policy teams that can apply adequate tools for social learning and proper evaluation of past, present and future risks, and of adaptation options (Folke 2006, Tschakert and Dietrich 2010).

### **c. Provision of enabling environments for autonomous adaptation**

Besides implementing a series of adaptation and development measures themselves, governments play a key role in providing the enabling environments required for adaptation. Decision-making processes should focus on the supply of the right information, incentives, resources and skills to citizens so that they can increase their resilience and adapt to climate change in an autonomous manner (Fankhauser *et al.* 2007). Reduced vulnerability, sustainable development, and adaptation processes can be promoted by guaranteeing rights to land and resources<sup>[1]</sup>, setting an equitable and fair regulatory framework, promoting development and sustainable natural resource management, and creating economic opportunities through access to markets, economic incentives and other key assets (Bapna *et al.* 2009, Fankhauser *et al.* 2007). Enabling environments are also required for the promotion of national and regional technical and technological innovation, while education, awareness-raising on climate change impacts and adaptive strategies are an imperative for stimulating new behaviors and practices (Fankhauser *et al.* 2007).

### **d. Establishment of participatory, inclusive decision-making processes**

Social participation and citizen action are the foundations of a fair and effective implementation of adaptation policies and strategies. National policies must come from a participatory decision-making process where major social movements and the main stakeholders of the country participate actively and legitimately. Only a bottom-up approach can allow for the timely identification of local priorities and needs, as well as of the preferred short and long-term responses and related trade-offs. Participatory processes also strengthen the social and political bases of decisions and policies implemented, contributing to their effectiveness and feasibility.

### **e. Creation of partnerships with decentralized governments and key stakeholders**

Since adaptation to climate change is local, responses need to be implemented at a local level. The establishment of partnerships between central and regional/local governments can provide a unique opportunity to test potential models for the design of national programs, generate experience, and strengthen partnerships between urban and rural communities. Similar opportunities can also come from collaboration with other key stakeholders, such as indigenous peoples, local communities, youth, women and the private sector. A successful and effective implementation of measures in cities, provinces and traditional territories can promote the creation and consolidation of national and climate change policies by demonstrating political, social and economic feasibility.

## **2. Build and manage information and knowledge**

Research and information are key elements of any decision-making process, especially when decisions are to be made under uncertainty. To date, most research on climate risks, vulnerabilities and adaptation strategies has been concentrated in lower latitudes. While useful, results are often not applicable to tropical developing countries, since there are deep differences in terms of exposure to climate events, adaptive capacity and sensitivity. In this context, building and managing information, knowledge, tools and strategies by and for tropical countries is crucial. While it may not be possible to eliminate uncertainty, the identification of trends and effective strategies can facilitate the definition of more suitable responses to climate change impacts.

### **Learning to listen...**

**Quito's Climate Change Panel:** A connection between science and policy

One of the most important qualities that should distinguish any decision-maker is to know how to listen. Responsible decisions are only made when well-informed; this implies the creation and consolidation of strong links with the scientific and expert community on one side, and with the stakeholders that are directly and indirectly affected by decisions, on the other. Neither of these connections is evident. Specific mechanisms and channels for communication and coordination between policy-makers, the scientific community and the civil society may often need to be created.

In the Metropolitan District of Quito, the capital of Ecuador, the work of Quito's Climate Change Panel (QCCP) aims at facilitating the translation of science into policy, as well as access to research and scientific advances for decision makers. QCCP is an expert body formed by Ecuadorian scientists and climate experts that will advice the Municipality (MMDQ) on decision-making related

to adaptation and mitigation of climate change. An articulated work between decision-makers and climate and development experts can contribute positively in the establishment of key programs and actions in cities like Quito.

Besides climate-related information, such as predictions, models and meteorological data, socio-economical, historical and geographical information are of particular importance for adaptation processes (McGray *et al.* 2007). In several developing countries, this strategically relevant information is not necessarily available to decision-makers. Because of their importance, governments should allocate resources and create mechanisms both for research in these areas and for communication infrastructure and management tools (including ICTs). Adequate and timely access to knowledge by civil society, the private sector and other decision-makers is of special importance. Information needs to be made public in an understandable manner, facilitating learning, exchange and transfer to other stakeholders (Tschakert and Dietrich 2010); as well as an informed participation in decision-making processes.

**In the Andean region, research in the following areas is key to support current decision-making processes:**

- Costs incurred by governments to face past and current impacts of climate change, so that a proactive approach is supported by economic data;
- Criteria to establish baselines and socio-economic scenarios that will interact with climate forces;
- The interplay between natural disasters and gradual change, since most research has focused on risk management and not necessarily on adaptation to the gradual effects that climate change is having on key resources, such as biodiversity and water;
- The development of climate scenarios based on models that are more suitable to tropical and mountainous countries;
- On the ground information on climate change impacts felt by local communities, potential adaptation strategies, resilience dynamics, and social trade-offs of specific measures;
- The social, economic, and environmental impacts of adaptation measures.

Awareness-raising and training activities should accompany access to knowledge. Capacity-building on potential adaptation strategies and climate change impacts needs to be a core part of a State's response to this global challenge; with limited resources, efforts should focus on the most vulnerable communities and other key

stakeholders that may have a multiplying effect, such as media, educators and communicators. In the Municipality of Quito, for instance, intervention areas for capacity development were prioritized through the use of geographical information on poverty indexes and natural disasters (Figure 1).

### **3. Keep a portfolio of options and reserve the right to play**

The wisest move a decision-maker in a developing country can make is to build a portfolio of adaptation strategies and measures. With flexible frameworks, and based on participatory mechanisms, processes can turn to the most appropriate options depending on local needs, circumstances and priorities, as well as take advantage of potential opportunities that may arise from them (Courtney *et al.* 2007).

Among the range of options and responses adaptation processes can include to face uncertainty are:

- No-regret, win-win adaptation strategies, such as those related to poverty reduction, capacity-building and sustainable natural resource management and governance;
- Robust measures that maximize their expected performance over a variety of climate change scenarios, and are better suited to endure climatic shocks (Fankhauser *et al.* 2007, Prato 2008);
- A mix of traditional coping mechanisms and technology innovations;
- Pilot projects, trials and investments that may enable scaling up successful strategies and models.

Adaptation strategies need to be defined and implemented in advance of expected climate change impacts (Tschakert and Dietrich 2010). This is especially difficult in the case of preparation and planning for surprises and drastic changes that may result from climate change, where big investments or bets under uncertainty may be required. In order to face such a decision-making challenge in a context of limited resources, governments can follow a strategy used by businesses in times of uncertainty: *reserving the right to play* in the future by establishing policies and measures that can help keep options open (Courtney *et al.* 2007).

In cases related to issues like sea-level rise, coastal development and relocation, governments can be better prepared for future responses to climate risk by making incremental investments in these areas, and/or by the progressive implementation

of adaptation initiatives that can start in public lands, key ecosystems and more flexible activities and economic sectors (Borbor, pers. comm; Courtney *et al.* 2007). This can help minimize social, political and ecological trade-offs and avoid committing to a dramatic strategy prematurely.

#### **4. Monitor and evaluate outcomes and changes**

As stated before, adaptation to climate change is an ongoing process that requires continuous monitoring and evaluation of impacts and outcomes of implemented strategies. Policy frameworks must be flexible in order to better meet new social, technical, climatic or environmental circumstances. In this context, the establishment of a multicriteria monitoring and evaluation system for the sustained analysis of the progress and effectiveness of measures adopted is required (McGray *et al.* 2007). In addition to including a set of impact indicators that measure the performance of strategies, such a system should consider: emerging knowledge and information regarding climate change scenarios and its impacts; new adaptive strategies and technological advances; and changes in the *subjective probabilities of climate change scenarios* (Prato 2008).

In order to acquire timely, relevant information and knowledge about adaptation strategies, climate impacts, key indicators, etc., the involvement of public institutions in subnational, regional and international networks and initiatives is highly recommended. Participation in such ventures can facilitate access to methodologies and strategies that work in similar environments and conditions, and avoid the duplication of efforts.

##### **Quito Initiatives**

The city of Quito, in Ecuador, is implementing initiatives that are good examples of subnational cooperation that could maximize a multiplying effect. These are the Manual for Local Climate Change Management and the work of the Ecuadorian Local Environmental Authorities' Network. The former, a joint effort with UN Habitat, will provide a basic tool for other municipalities in Ecuador to develop local strategies to tackle climate change based on Quito's experience. The latter, which will initially have a focus on climate change, aims at standardizing tools and methodologies (vulnerability analyses, GHG inventories, climate change strategies, etc.), creating an experience-sharing platform and promoting the development of joint adaptation activities.

## **Conclusions**



In a context of limited technical and financial resources, decision-makers in developing countries should prioritize the consolidation of social and institutional frameworks that allow for continuous adaptation to the impacts of climate change and new socio-economic scenarios. This calls for strong political and social leadership, characterized by an ability to learn from the past and the present, and by a true commitment to the future. The crisis the world is currently facing should be seen as a unique opportunity to set the foundations for resilient, fair and adaptive societies. Cooperation, proactivity, good governance and social participation will be key in the process.

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10 G Street NE Suite 800, Washington, DC 20002, USA

Phone +1 (202) 729-7600

Fax +1 (202) 729-7610