INSIDE STORIES
on climate compatible development

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Key messages

- The city of Quito is a good example of how climate vulnerability information can feed into the policy cycle and be translated into meaningful actions on the ground. Quito has demonstrated that developing city-level tailored indicators and key policy-relevant questions in a participatory manner, involving local authorities, local experts and external support, can build trust and facilitate institutional ownership of the information generated.

- Quito's vulnerability evidence has been legitimised and taken up effectively in the Metropolitan District of Quito for two main reasons: the methodology and final outputs responded to the Municipality's demands, needs and priorities; and technical authorities from the Municipality were active participants in the process rather than just recipients of information.

- Quito has enhanced its practical implementation of climate adaptation solutions by identifying options that take account of the diversity of views and sources of evidence, as well as both women's and men's individual understanding of climate change vulnerability.

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Acting on climate vulnerability: Lessons from Quito

Over the past century, Quito has experienced an average temperature increase of around 1.3°C. This change in the city's climate patterns directly and indirectly affects ecosystems, agricultural production, infrastructure, water availability, and human health and security. Faced with such climate change impacts, the Metropolitan District of Quito (Distrito Metropolitano de Quito, DMQ) has shown leadership and commitment in integrated and sustainable climate compatible urban development. The Climate and Development Knowledge Network (CDKN) has been working with DMQ to progress the district's strategic and priority scenarios for dealing with climate change. Following assistance with the participatory design of Quito's five-year Action Plan, CDKN has been assisting with a climate vulnerability study to consolidate separate pieces of research on climate impacts and vulnerability and to fill gaps in the knowledge base. The following case study describes for the first time the study's methodology and some lessons learned, particularly the importance of sustained intersectoral coordination; involvement of, and thus ownership by, local technical experts and other stakeholders; and a successful fit with the local political context.

Metropolitan District of Quito – a leader in climate compatible urban development

DMQ's policy and regulatory framework prioritises local climate change and knowledge management. Quito adopted its Climate Change Strategy in 2009 and its Action Plan in 2012, and it has set ambitious goals for adaptation and mitigation in its Environmental Agenda 2011–2016[1] and development and land-use plan (2015–2025).[2] In 2010, the

Municipality signed the Mexico City Pact,[3] committing to strengthen its institutional capacity and governance to address climate change. Quito was a pioneer, scaling up the Quito Climate Pact initiative nationwide in June 2011.[4]

Its subscription to the C40 Cities Climate Leadership Group[5] and ICLEI – Local Governments for Sustainability[6] (see Box 1), its hosting of the UN Habitat III conference in 2016,[7] and its recognition as a resilient city by the Rockefeller Foundation[8] are further examples of

the Municipality's commitment to sustainability and climate compatible development.

Generating evidence to support climate adaptation actions

The CDKN–DMQ[9] programme was created in 2009 to assist the local government to develop its first climate adaptation and resilience plan, facilitated by Fundación Futuro Latinoamericano as CDKN's local alliance partner. A vulnerability study for DMQ began in 2010.

The Municipality's previous experience in assessing and identifying management actions to reduce vulnerability to natural hazards such as earthquakes, landslides, forest fires, floods and volcanic eruptions meant that Quito's authorities had the capacity to identify non-climate-related threats. But while the Municipality had a general idea of its vulnerability to climate change, based on scattered sectoral studies that used a variety of different methodologies, there was a need to pull the information together to inform integrated policies and actions.

Thus, the Municipality identified the need for high-quality evidence to inform adequate climate change policies. The intention was that this cutting-edge evidence would feed the policy cycle and inform climate compatible policies. In response to this need, CDKN's Latin American alliance partner Fundación Futuro Latinoamericano was able to offer a range of good practices available to evaluate the vulnerability of five strategic sectors: water, biodiversity (ecosystems), risks (forest fires), agriculture and health. CDKN's technical partner, the Stockholm Environment Institute, conducted the study, which adapted the Intergovernmental Panel on Climate Change (IPCC) methodology[10] to the needs of the city.

The Institute also developed a knowledge management system (geoportal) with the aim of scaling up this process to other sectors within DMQ, and beyond Quito to other local governments. The authorities were involved in identifying the key policy-relevant questions and designing indicators.

The study aimed to translate the assessed vulnerability into concrete actions by answering the following policy-relevant questions:

Water: How vulnerable is Quito's potable water system to future changes in both water supply and water demand?

Agriculture: How sensitive are key crops produced in the Quito region to changes in growth cycles associated with rising temperatures?

Biodiversity (ecosystems): What is the relative vulnerability of priority ecosystems to increases in annual temperatures when anthropogenic hazards are also taken into consideration?

Health: Which illnesses affecting the population of Quito are most linked to climate variables and how are these links accentuated by socioeconomic conditions?

Risks (forest fires): Which zones in Quito are most affected by human activity and climate variability in terms of fire propagation?

The vulnerability study was an expensive, long and highly technical investment. The outcomes largely met the Municipality's expectations, with the exception of the health sector, where gaps in research findings and communication had to be addressed with additional support from CDKN.

The results for the health sector were thus incomplete, and still considered to be too complex to feed into the relevant policy cycles due to the risk of misinformation and flawed decisions in that area. For the other four sectors, the results were suitable for consideration at the policy level and, in some cases, were suitable for implementation.

Prioritising the climate change agenda at the core of political strategy

The Climate Change Unit of the Municipality was already aware of the importance of considering climate change in local political strategy, before the CDKN–DMQ programme. However, multi-sector vulnerability assessments and policy-relevant evidence were needed in order to incorporate these new elements within Quito's development and land-use plan.

The 2015–2025 plan[11] is the city's current strategic instrument, which gives direction to all the actions, decisions, investments and ventures that will occur in DMQ in the coming decade. The results of the vulnerability study and other CDKN projects are reflected across that document and will support DMQ in achieving its goals of reducing emissions and climate vulnerability.

This achievement means that Quito has integrated climate change as a variable within its local environmental management approach. It has set clear goals to reduce emissions and vulnerability in various sectors as part of the environmental section of the development plan, titled 'Quito: smart city', demonstrating climate change positioning at the highest political level in the city.

Enhancement of internal dialogue and institutional discourse

The vulnerability study used an inter-sectoral approach from the design phase. Key actors from the different sectors within the Municipality were involved throughout the process. The project identified contact points and local experts in each of the five sectors listed above, and promoted cross-sectoral meetings. The project provided a good opportunity to bring these sectors together to discuss climate change.

This new space for dialogue was promoted by the Municipality's Climate Change Unit and Knowledge Management Unit, and was highly positive in moving climate change up each sector's agenda. It also helped to clarify the perspective and dynamics of each sector, as well as to identify potential synergies with the Climate Change Unit that would be beneficial for implementation.

In some cases, specifically the risk and health sectors, the project increased stakeholder buy-in to policy development.

Framing strategy to local context, strengthening capacities of vulnerable populations and participatory processes

After the conclusion of the vulnerability study, CDKN supported the Municipality through a new project, Measures for Piloting Climate Change Adaptation in Quito,[12] implemented by Corporación ECOPAR, which built on the vulnerability results and included the participatory prioritisation of a set of adaptation measures implemented in two rural areas of DMQ. This new evidence-informed project involved stakeholder mapping of two areas, where CDKN

identified the power relations and inequalities of stakeholders through a gender lens. The most vulnerable groups and actors were then contacted and involved in the process through consultation meetings and capacity-building workshops. The project also evaluated people's perceptions about vulnerability to climate change.

During this process, it was important to understand and consider the perceptions of the population in general, in order to take gender-appropriate actions. It was also important to map people's perceptions about climate change vulnerability and match these perceptions to the technical results of the vulnerability study. This approach could be considered one of the main lessons to apply to the design of measures for climate change adaptation. For the authorities, understanding both perceived and assessed vulnerability is necessary to help design and target interventions and to obtain more equitable outcomes of climate compatible development.

The project identified five measures appropriate to the needs and realities of people in the two areas studied. Two of these were prioritised as suitable for implementation based on the different needs and perspectives of all concerned:
- sustainable agriculture and irrigation practices
- ecosystem restoration using native species.

This climate change project represents the first attempt by the Municipality to take account of gender and people's perceptions of vulnerability.

Enabling factors and challenges to programme design and implementation

The achievements of the vulnerability study in DMQ can be attributed to both the legitimacy of the policy-relevant evidence and the conducive political context.

Legitimacy and ownership of policy-relevant evidence

From the start, the need for high-quality, evidence-based vulnerability information was perceived as key to enabling Quito to put climate change at the core of its development agenda. Such information had to be legitimised by the Municipality's technical team and authorities in order to scale up in a way that was relevant for policy-makers.

In the risk sector, for example, the vulnerability results rapidly blended into the policy process and implementation of the DMQ Wildfire Management Plan. In this case, it was not the provision of sound evidence alone that led to policy development and implementation. There was a set of conditions that ensured this achievement. First, the methodology and final outputs responded to the Municipality's demand for support, needs and priorities. Second, the key technical authorities from the Municipality were active participants in the process, rather than just recipients of information. These conditions, and the process itself, strengthened the capacities of the Municipality's technical team and facilitated the flow of information and understanding of the results within the Municipality. The Municipality's technical team was therefore empowered to advocate and scale up the results within their institution.

Although CDKN provided the information, it was the Municipality's capacity to coordinate with the different authorities involved in wildfire management that enabled the development of the plan.

A conducive context for policy-making

This achievement was also due to a conducive policy context. In recent years, Quito has faced severe fires during the dry season that have caused major losses and damage. These circumstances have moved fire management risks up the political agenda and have sped up the process of turning evidence into policy instruments and plans.

After the elections in 2014, Quito welcomed a change of personnel in the Municipality and its institutions. The new administration's approach to the city's sustainable development is to implement actions in the territory rather than to generate more evidence. This approach matched well with the process that the Climate Change Unit was carrying out with CDKN's support, and has facilitated the transition of the Quito programme towards implementing concrete actions informed by the results of the vulnerability study.

Challenges to programme design and implementation

The challenges experienced were due to three main factors: limited sectoral coordination, gaps in data availability, and limited capacity to deal with climate change issues outside the Municipality's Climate Change Unit.

Sustained coordination

Despite the continuous efforts made by the Climate Change Unit, coordination among sectors remains a challenge and constitutes a big risk for the implementation of climate compatible development.

Environmental officers acknowledge this risk, which is due partly to the complex governance structure of the Municipality and the different sectoral competencies in the use and occupation of land, mobility, productivity and security, among others. In the words of one representative of the Municipality:
"In spite of enormous efforts to

Box 2. Research on tropical vector-borne diseases

One example of the successful continuation of the vulnerability study, and of the importance of a beneficial political context, is research on tropical vector-borne diseases in DMQ. This study, conducted by CDKN´s technical partner, Universidad San Francisco de Quito, aimed to fill existing data gaps in order to estimate the climate vulnerability of the DMQ health sector. The project started at the time of an outbreak of the Chikungunya virus, and ended during an outbreak of the Zika virus. Both outbreaks rapidly became a concern for local and national public health authorities, as well as for communities in DMQ. This context increased the project's relevance, moved climate change higher up the political agenda, and could facilitate the integration of results with higher levels of government.

develop integration mechanisms around adaptation, we haven't been able to achieve optimum coordination at local or municipal level, because of the scale, scope, and environmental, economic, social, cultural and institutional diversity involved." [13]

However, this perception shows the need to create an inter-institutional committee on climate change led by the Environment Department under the Sustainable Quito approach, and to support the new urban agenda under Habitat III.

Data availability and accessibility

Availability of and access to historical data are made possible through the Knowledge Management Unit of the Environment Department. Each sector has its own procedures and software to store and manage historical data, as well as different policies for access to and use of the information. In some cases, particularly in the health sector, it was extremely challenging to access data. The authorities responsible for the data were not always willing to share health information; in some cases data did not exist. In the water sector, the availability and quality of data were better than in other sectors, and information was much easier to access and reconcile with data used in the vulnerability study.

Limited understanding of climate change issues outside the Climate Change Unit

Outside the Municipality's Climate Change Unit, understanding of climate change issues is still limited. It was challenging to communicate the relevance and importance of a cross-sectoral climate change vulnerability assessment. Climate change requires a different set of skills and approaches to decision-making, as it involves high levels of uncertainty and forward thinking.

Implications for decision-makers and practitioners elsewhere

As the development of climate change adaptation policies becomes a priority around the world, vulnerability assessment is changing from an academic exercise to a policy requirement.[14] In this context, Quito has much to share about its learning around the process of developing and implementing climate compatible development policies at district level.

The first lesson relevant to practitioners and policy-makers elsewhere is the importance of standard methodologies. Quito made an effort to find its own definition of vulnerability and built on a methodology legitimised by an international body, the IPCC. This facilitated political buy-in and the flow of information within the whole policy process.

The second lesson learned from Quito was the importance of building credible and tailored indicators. Policy-makers often mistrust vulnerability indicators as they may consider the process for building such indicators is not transparent.[15]

This is due primarily to incomplete understanding of the process and limited involvement in the development of knowledge. Indicators are a way of synthesising complex information, based on (often academic) variables, thus enabling vulnerability information to be presented as a single metric. The process for defining such indicators[16] could be a solution for ensuring that vulnerability information is useful outside the scientific community. The case of Quito shows that developing tailored indicators and key policy-relevant questions in a participatory manner, involving authorities, local experts and external support, builds trust and facilitates ownership of the information generated.

Overall, the example of Quito demonstrates the importance of the transparency and legitimacy of scientific and technical processes in the eyes of policy-makers. The process of working hand in hand with local experts and authorities helps build capacity and, at the same time, creates ownership of the data and information generated. This approach reduces misunderstandings, poor communication and false expectations between those producing the information and those receiving, interpreting and using it.

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