ELLA
Evidence and lessons from Latin America

The City of Quito is successfully mainstreaming innovative adaptation practices into development planning under a participative management platform. So how has it been possible to push forward these reforms?

CITY-LEVEL CLIMATE CHANGE ADAPTATION STRATEGIES: THE CASE OF QUITO, ECUADOR

SUMMARY

Climate change adaptation strategies at city-level are increasingly important for identifying and implementing adequate responses to climatic threats. Quito's Climate Change Strategy (QCCS) includes a range of innovative programmes that combine risk reduction with institutional capacity building and enhanced citizen participation. This case study presents the story of how such an innovative policy package came to be implemented, including the contextual and enabling factors that made it possible. It concludes by presenting the current status of the QCCS' implementation, remaining challenges for the future, and lessons learned that may be useful for other cities.

CITY-LEVEL ADAPTATION PLANNING IN LATIN AMERICA AND BEYOND

Cities in developing countries are extremely vulnerable to climate change, facing the consequences of sea-level rise, landslides, floods and heat islands. These vulnerabilities exist alongside other serious existing city management challenges, such as high urban poverty levels, fast growing populations, difficulties in basic services provision and budget limitations.

Urban planners have long understood the need to address climate change at the local level, but the challenges to put effective city-level adaptation into practice remain considerable. Cities like Dhaka, Lagos or Quito will need long-term commitment to climate change adaptation, while at the same time having to integrate sustainable development, disaster risk management and poverty reduction objectives into adaptation planning. The lack of generally accepted best practices for city-level adaptation continues to be a serious bottleneck in this respect.

KEY LESSONS LEARNED

Aligning adaptation with existing sustainability and environmental concerns reduces cities' vulnerability to climate change in an integrated way.

Adaptation planning may be less successful where necessary administrative reforms, including participatory management, are not addressed.

Gradual implementation of climate change adaptation actions can allow for crucial learning and capacity building before comprehensive strategic adaptation plans are carried out.

Latin American cities have advanced significantly in implementing the urban adaptation agenda (see Text Box 1). Quito is a particularly interesting example; the city decided quite early on to gradually integrate adaptation into development planning and has now implemented a farsighted climate change strategy with participatory elements, called the Quito Climate Change Strategy (QCCS).

This case study analyses Quito's approach to climate change adaptation, in particular asking how the city has managed to integrate adaptation strategies into city-level planning, what the critical decisions to be taken were, and how barriers to implementation have been overcome.

TEXT BOX 1: LATIN AMERICAN CITIES AND QUITO CLIMATE CHANGE ADAPTATION PLANNING

A recent global study among 468 member communities of the ICLEI Local Governments for Sustainability network found that 95% of Latin American cities are engaging in climate change adaptation planning. This number is higher than in any other region in the world; only 80% of African cities and 67% of Asian cities in the study were implementing adaptation planning initiatives. Latin American cities cite human health, infrastructure, job loss, housing, nature conservation and economic development as priority issues for city-level adaptation. Engaging in partnerships with NGOs and community groups also ranks high on their agendas.

Evidence from a comparative study on climate change experiments in 100 cities worldwide shows that Quito is an early adapter, along with only 5% of all cities in the study. Quito also relies on more enabling governance mechanisms than other Latin American cities, and includes a focus on social innovation and environmental justice in adaptation.

Sources: Carmin, J., Nadkarni, N., Rhie, C. 2012. *Progress and Challenges in Urban Climate Adaptation Planning: Results of a Global Survey*. MIT, Cambridge.; Broto, V.C., Bulkeley, H. 2013. *A Survey of Urban Climate Change Experiments in 100 Cities*. Global Environmental Change 23 92–102.

THE CASE: QUITO'S APPROACH TO CLIMATE CHANGE ADAPTATION

Quito's Vulnerability to Climate Change

Quito, the capital of Ecuador, has a population of 2.24 million.[1] The city is located at 2,800 meters above sea-level in the Andes Mountains, and is surrounded by 14 active volcanos, including Cotopaxi volcano with a summit of 5,897 metres. Seismic activity is also intense. Quito's landscape is characterised by steep slopes, ravines and gorges. Recurrent floods, earthquakes and landslides cause extensive damage, particularly in informal settlements which are located on steep hillsides or in the urban periphery. Over 670,000 people live in these high-risk areas, and overall, 43.5% of its inhabitants live below the national poverty line.[2]

Figure 1: Typical Quito landscape of steep and narrow streets and hillside construction
Source: Monica Andrade

Climate change has increased mean temperatures in Quito between 1.2°C and 1.4°C over the last 100 years. Future warming in the municipality may reach 3.5°C under the IPCC A2 scenario.[3] Ongoing glacier retreat is predicted to reduce clean water supply and irrigation capacity due to high reliance on glacier basins. Habitat destruction, higher drought frequency, and rainfall and flood intensification are other expected impacts, including through increased El Niño variability.

[1] Secretária de Territorio, Hábitat y Vivienda. 2012. *Población y Proyección del Distrito Metropolitano de Quito según Parroquías y Administraciones Zonales*. Secretária de Territorio, Hábitat y Vivienda, Quito (in Spanish).
[2] FLACSO, UNEP. 2011. *Quito Environment and Climate Change Outlook*. UNEP, FLACSO, Quito.
[3] Zambrano-Barrágan, C. *et al.* 2010. *Quito's Climate Change Strategy: A Response to Climate Change in the Metropolitan District of Quito*. Paper prepared for the 1st World Congress on Cities and Adaptation to Climate Change, Bonn.

Early Adaptation in Quito: Disaster Risk Reduction and Development Planning

Quito's city planners became concerned about climate change at a moment when international climate negotiations, including those pertaining to the UNFCCC Kyoto Protocol (1997), still focused largely on mitigation. Similar to other Latin American cities, like Rio de Janeiro, São Paulo and Lima, early climate risk assessments played an important role in building practitioners' awareness of the necessity of adaptation. As a result, Quito gradually implemented new risk management and adaptation strategies, including hillside management (1997), intensification of glacier monitoring (1998), flood control (1999), watershed protection (2000) and urban agriculture (2002). These programmes moved away from emergency response to integrated disaster prevention and preparedness that included climate change components and promoted public-private partnerships.

Two main factors were responsible for putting this proactive adaptation approach on Quito's agenda. First, existing disaster response strategies did not address the city's increasing governance and development challenges sufficiently. Since the 1950s, Quito's area had grown 20 times and its population by a factor of six, causing deforestation, overloading of natural drainage systems and difficulties in basic services provision. New residents and migrants settling in high-risk hillside areas suffered severely from increasing floods and landslides[4].

Second, lack of national-level government leadership on adaptation required local actors to become active. Although Ecuador had implemented a National Policy and Strategy for Climate Change in 1998, no regulations on adaptation had been implemented. This offered a window of opportunity for gradually engaging in climate change adaptation. Important changes in the city's governance structure also supported this new process (see Text Box 2).

The Quito Climate Change Strategy

The development of a comprehensive climate change strategy gained traction when Quito decided to host the 2007 *Clima Latino* event, the first climate and development event in the Andean region. Key local leaders, including Mayor Paco Moncayo and members of the Municipal Council of Quito, forced the development of a draft climate plan based on new evidence of the adverse impacts of climate change in Quito.

TEXT BOX 2: CONTEXTUAL FACTORS UNDERPINNING QUITO'S REFORM

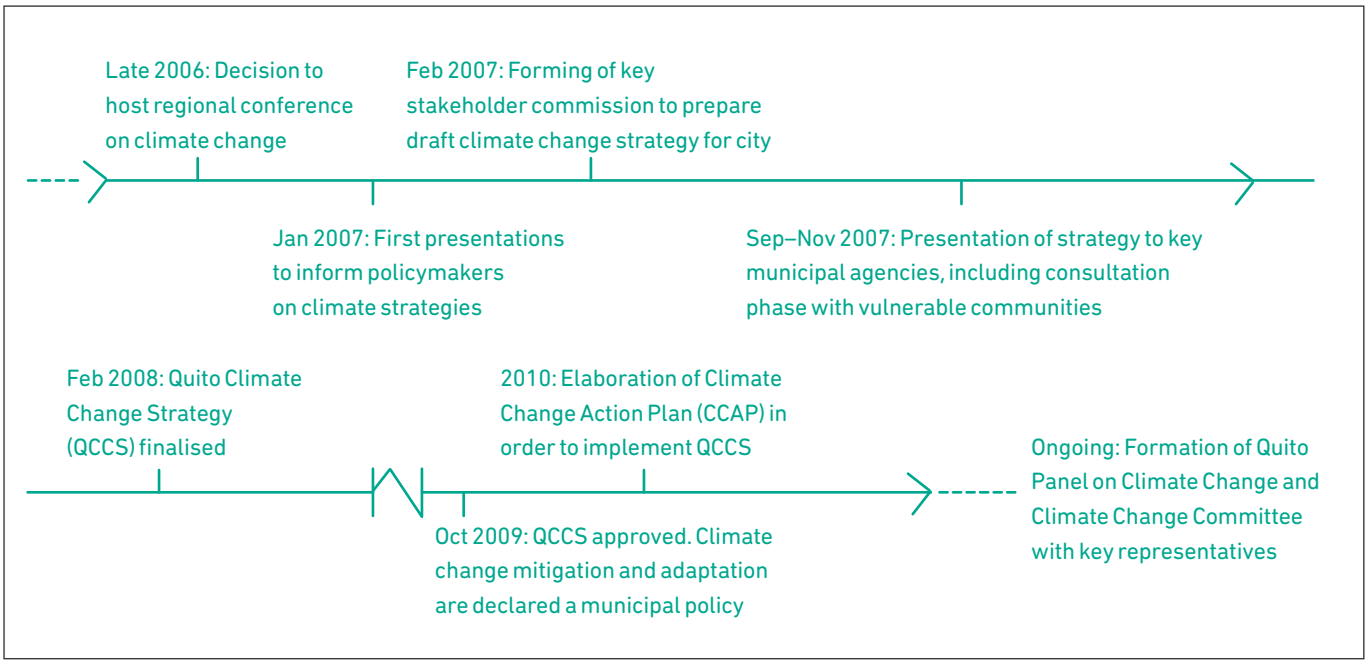
What are some of the underlying contextual factors that enabled Quito to successfully push forward the QCCS?

- Reform of Quito municipal law (1993): added new public authorities responsible for climate change adaptation, included compulsory authority in defining environmentally-protected areas, assignation of land use and coordination of territorial management
- Administrative decentralisation and participatory management reforms (starting 2000): strengthened partnerships with NGOs, CSOs and universities in local policymaking and development, including climate change adaptation
- Existing capacity to address complex environmental problems: due to early experiences in air pollution and waste management at the city-level, Quito's technical staff were well prepared to understand the challenges of climate change, and consequently engage in action
- Support from key stakeholders: adaptation was not seen as a cost, but rather served stakeholders' self-interest. For example, the need for investing in water resources due to glacier retreat had become evident in the 1990s, which helped reduce resistance from the city's powerful water company to implement far-reaching reforms
- Willingness to enter partnerships: for example, the watershed protection programme brought together national and international NGOs, the municipal water company, the municipality of Quito, the central government and an international donor agency

Sources: Carmin, J., Anguelovski, I., Roberts, D. 2012. Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain. *Journal of Planning Education and Research* 32 18–32.; Carrion, D., Vasconez, J., Bermudez, N. 2003. The Case of Quito, Ecuador. In: UN-Habitat. *Global Report on Human Settlements 2003: The Challenge of Slums*. Earthscan, London.

[4] Quito's 1987 earthquake killed approximately 1,000 people and resulted in US$700 million in damages due to landslides. The 1997 mud and debris flows led to loss of life and property in popular neighbourhoods. See: Brabb, E.E. 1991. The World Landslide Problem. *Episodes* 14 52–61; Escuela Politécnica Nacional. *et al.* 1994. *The Quito, Ecuador, Earthquake Risk Management Project: An Overview*. GeoHazards International, San Francisco.; Pacific Disaster Center. 2005. *Quito, Ecuador: Disaster Risk Management Profile*. Pacific Disaster Center, Kihei.

Figure 2: Timeline of Quito's Climate Change Strategy Implementation



Own elaboration.
Sources: Carmin, J., Roberts, D., Anguelovski, I. 2009. *Planning Climate Resilient Cities: Early Lessons from Early Adapters*. Paper prepared for the World Bank, 5th Urban Research Symposium, Marseille.; Zambrano-Barragán C. *et al.* 2010. *Quito's Climate Change Strategy: A Response to Climate Change In The Metropolitan District Of Quito*. Paper prepared for the 1st World Congress on Cities and Adaptation to Climate Change, Bonn.

The plan was drafted quickly by a specially-formed Inter-Institutional Commission composed of several municipal agencies. Importantly, the plan was later presented to key community-based organisations and NGOs to integrate community perspectives. Figure 2 demonstrates some of the key moments in the process of elaborating the plan, building buy-in and ultimately getting it passed.

The final QCCS adopted consolidates existing adaptation and mitigation practices and introduces new programmes all under one comprehensive strategy. In particular, policymakers decided not to separate adaptation and mitigation in the QCCS so as not to create an artificial distinction between both lines of action which often have overlapping purposes. Since 2009, the QCCS is an official municipal environmental policy. It is organised under four strategic areas:[5]

1. Access to adequate information to promote adaptation and reduce vulnerabilities: identifying and reducing gaps in climate-relevant data for effective risk management and vulnerability assessments

2. Use of technology and good environmental practices for adaptation: promoting climate-resilient agriculture and agro-forestry, conservation and integrated water resources management

3. Focus on communication, education, and citizen participation: providing information and raising awareness on climate change impacts, including through non-formal education campaigns; implementing institutional mechanisms for citizen participation in the QCCS

4. Strengthening institutional capacities for climate change adaptation: consolidating and mainstreaming the QCCS within the larger Quito government and strengthening inter-institutional coordination and cooperation

The Secretariat of Environment under the Municipality of the Metropolitan District of Quito is the main entity responsible for overall management of the climate adaptation strategy. Their responsibility includes coordinating with the variety of actors who all have a part to play in the QCCS. Concrete adaptation policies are designed by the municipal

[5] Municipality of the Metropolitan District of Quito, Secretariat of the Environment. 2009. *Quito Climate Change Strategy*. Municipality of the Metropolitan District of Quito.

government. Implementation and operations are delegated to the respective actors, such as public companies, city agencies and other municipal secretariats. Climate information is supplied through an extensive network, including the National Institute of Meteorology and Hydrology (IMAMHI), Municipal Corporation for Air Improvement and the Quito Observatory meteorological station.

Concrete adaptation experiences in addition to existing programmes have also been planned through the Quito Climate Change Action Plan (CCAP, 2012–2016). Programmes have concrete time horizons for fulfilment and focus on short- to medium-term targets. Some of the main programmes, and the results that have been achieved so far, are described in Figure 3.

Financing largely comes from the city's own resources. One example is the 2005 Environment Fund which is dedicated to protecting biodiversity and environmental quality in the district. Public companies, such as Quito's Water Supply and Sanitation Company, promote adaptation programmes and projects using incremental levies and taxes[5]. To complement the city's financing, international donors provide stand-alone funding for adaptation projects, including the World Bank, UN Habitat, The Nature Conservancy and the Climate and Development Knowledge Network (CDKN).

Figure 3: Selected Climate Adaptation Actions in Quito

Actions	Strategic Area(s)	Description	Results	(Planned) Investments
Quito vulnerability and adaptation assessment	1	Identify regions and sectors particularly vulnerable to climate change; priority regions for action to be identified through geospatial data on poverty and disaster risk	Under development	Cooperation with CDKN and others, US$ 550,000
Integrated Climate Risk and Early Warning Plan	2,3	Prevent, reduce and mitigate impacts due to extreme weather events and generate timely information for decisions	Under development	US$ 600,000
Actions build on Quito's Water and Sanitation Master Plan (2010–2040) (only in Spanish)	2	Investment in water conservation plans, water supply infrastructure and improvements in storm drainage systems; considers demand increases and conservation actions	Infrastructure activities range from 10% to 100% completed	US$ 300 million plus several small investments
Hillside Management Programme (1997 –) (only in Spanish)	1,2	Integrated management to minimise threats from mudslides and landslides in Quito's central and northern hillside regions	Social vulnerability study, disaster risk reduction plan, 250 small-scale works and 51 large-scale works completed	Approximately US$ 40 million to date
Actions build on Urban Agriculture programme (2002 -)	2,3	Help indigenous and migrant dwellers improve their agricultural productivity and business skills; capacity building programmes on climate-resilient agriculture for 1,000 farmers annually	48,000 beneficiaries and consumers, 56 productive enterprises	Cooperation with small NGOs, includes US$ 265,000 investment
Youth Action on Climate Change (2010 –)	3	Strengthen youth action on climate change through capacity building workshops in risk-prone, marginalised neighbourhoods; includes youth participation in policymaking and green volunteering programmes	Start of nine innovative projects by high schools, NGOs and universities, environmental film festival	Cooperation with World Bank, includes US$ 100,000 investment
Quito Panel on Climate Change	1.4	Support the development of a climate change research agenda based on Quito's research and information needs	Under development	n/a

Own elaboration.
Sources: Municipio del Distrito Metropolitano de Quito. 2012. *Plan de Acción Climático de Quito 2012–2016*. Secretaría de Ambiente/Municipio del Distrito Metropolitano de Quito, Quito; Johnson, K., Breil, M. 2012. *Conceptualizing Urban Adaptation to Climate Change: Findings from an Applied Adaptation Assessment Framework*. CMCC Research Papers Issue RP0131, Centro Euro-Mediterraneo per i Cambiamenti Climatici, Lecce; Secretária de Ambiente. 2011. *10 Acciones de Quito Frente al Cámbio Climático (10 Quito Actions to Face Climate Change)*. Secretária de Ambiente, Quito.

THE CASE OF QUITO

CURRENT STATUS AND ONGOING CHALLENGES

Quito's approach to climate adaptation is now consolidated through the QCCS and CCAP. The commitment of local actors to adaptation, including public, private and civil society, is high; problems have been identified jointly, and innovative actions are now being implemented in risk management, recuperating degraded urban forests, climate-resilient agriculture, managing water resources and institutional capacity building.

Inclusion of community groups and NGOs in the consultation and implementation phase has strongly enhanced local ownership of these processes. Gradual implementation of adaptation programmes prior to developing the QCCS and CCAP has given actors time to learn to adapt and build capacity before engaging in a more strategic approach. Overall, the Quito case highlights the need to address climate change adaptation planning as a process in order to increase learning and local ownership.

Through municipal reforms, an Inter-Institutional Commission on Climate Change is now becoming the participative platform for climate change adaptation policies, programmes and actions. Lessons learned are actively being shared with other countries in the Andean community and through several regional and international networks.

Ongoing challenges, however, remain considerable. Monitoring and evaluation mechanisms are not yet consistent and timely, and financing long-term adaptation remains an open question. Furthermore, it is unclear how Quito's adaptation approach will fare as the city develops, including rapid population growth in high-risk areas and related social and environmental problems, and how climate change ultimately will affect these trends. City adaptation actions alone will thus likely be insufficient to make Quito resilient to climate change, emphasising the need for more comprehensive development strategies, including at the national government level.

Nevertheless, Quito's approach to climate change adaptation represents important first steps in preparing the city for climate change while promoting equitable and participative development. Existing bottlenecks and challenges for adaptation have been identified in the QCCS and CCAP. Overall, climate change adaptation is thus being effectively mainstreamed into the city's development agenda.

LESSONS LEARNED

1. City vulnerability to climate change is about more than just climate. By aligning adaptation with existing sustainability and environmental concerns, Quito has addressed other relevant and already existing problems, while taking steps to prepare the city for the impacts of future climate change.

2. Timely city-level administrative reforms were key to creating a platform for adaptation planning in Quito. Successful implementation of adaptation may be much more limited where administrative decentralisation, participatory management and institutional capacities are not addressed.

3. Gradual implementation of climate adaptation actions has allowed key actors to learn to adapt and to build their capacity from early on, before having to deal with complex and more comprehensive adaptation plans. As a result, the implementation of Quito's strategic approach to climate adaptation has faced little resistance.

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To learn more about adaptation and mitigation efforts in Latin America's cities, read the ELLA Guide to City-level Climate Change Adaptation and Mitigation, which has a full list of the knowledge materials available on this theme. To learn more about other development issues, browse other ELLA Themes.

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