

# Building the Resilience of Vulnerable Communities in Quito: Adapting local food systems to climate change

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**Marginalized urban communities living in informal settlements or on fragile hillsides and slopes in Quito, Ecuador, are the most vulnerable to the impacts of climate change, as they are highly exposed to frequent floods and landslides, droughts, food scarcity and uncertain food supply chains. This is particularly true as many of these communities depend on urban agriculture to secure sustainable livelihoods and achieve food security.**

Drawing on interviews in Quito with municipal departments, public officials, NGO staff, and local inhabitants, as well as official documents and reports, this article discusses whether the municipality of Quito is ready to adapt existing local food systems to the impacts of climate change and strengthen relevant policies and programmes.

## Climate change in Quito

With its geographic position and mountainous topography, Ecuador is highly vulnerable to climatic changes, especially in the area of water resources and conservation (Primera Comunicación Nacional, Quito, 2000). Cities such as Quito are already experiencing higher average and extreme temperatures<sup>1</sup>, a decrease in overall rainfall, but also more frequent extreme rain events, which cause landslides and mudslides (Dirección Metropolitana Ambiental y Fondo Ambiental, 2008). The melting of tropical glaciers and destruction of páramos – neotropical ecosystems in the Northern Andes which regulate hydrological systems – will also exacerbate the environmental and socio-economic costs of climate change. In the mid-term, this greater vulnerability to climate risks will worsen the problems of water governance in Ecuador and exacerbate conflicts over water resources (The Government of Ecuador *et al.*, 2008). The most vulnerable sector is agricultural production, mostly due to severe flooding and droughts affecting banana, corn, soy, and rice plantations in the lower Andes, Amazon, and coastal region (Primera Comunicación Nacional, 2000).

In Quito, the majority of poor, indigenous and migrant inhabitants living on the hillsides and slopes are practicing urban agriculture to improve their nutrition and have access to additional sources of income. In the 1980s and 1990s,

when Andean indigenous populations migrated to Quito, families established their houses and shelters on the 64 hillsides and ravines surrounding the city and often resorted to small-scale urban agriculture – growing corn and potato and raising guinea pigs and chickens – as a safety valve and social buffer.

## Supporting urban farmers

Urban agriculture in the Metropolitan District of Quito is officially supported by the programme AGRUPAR<sup>2</sup>, which was created in 2002 within CONQUITO, the metropolitan corporation for economic development. AGRUPAR agronomists provide seeds and seedlings, conduct technical training on agricultural production and commercialisation, and strengthen the management skills and micro-enterprises of urban farmers. However, AGRUPAR does not provide official land titles. It is the responsibility of the growers themselves to secure land and plots by engaging in direct negotiation with municipal staff and obtaining a lease to legalise their practices.

AGRUPAR supports two types of production units in urban and periurban areas: 1) *huertos demostrativos* (demonstrative community gardens) on communal land or on land that the municipality rents out for a minimal price to growers, and which receive an organic certification by AGRUPAR and 2) *réplicas familiares* (family duplicates) on individually owned land, when families are interested in applying the *huerto demostrativo* model to their plots of land. AGRUPAR's production is sold either in the neighbourhood, in "bio-ferias" (farmers' markets), or through a system of *canastas* – baskets of produce delivered weekly to consumers. A third type of production unit, which is not officially part of AGRUPAR but was developed by AGRUPAR families, consists of a small area of land in residents' backyards usually



Photos: Marielle Dubbeling.

converted into corn and potato fields. Here, families use part of the harvest for self-consumption and sell surpluses in local shops.

Two other types of urban agriculture projects exist in Quito, but they are not sponsored by AGRUPAR. First, communities in the less densely populated areas in the hills and páramos are engaged in periurban agriculture. Some of these projects are supported by the Environmental Fund within Quito's Environmental Office. Sponsored projects tend to prioritise environmental goals, such as sustainable resource management and fragile ecosystem protection, over socio-economic development. Second, a large number of low-income families in the Southern districts (i.e., Valle de los Chillos) and Northeastern districts (Las Delicias) grow produce independently in their backyards or on land they have occupied, but for which they have not received formal title.

In reality, urban agriculture is not officially recognised within the urban districts of Quito, and is only official and legal within the periurban districts. Even though the Territorial Planning Office "tolerates" urban food production, local farmers are faced with the risks of expulsion or termination of their leases. Overall, the systems most vulnerable to climate change are those located on the fragile hillsides and slopes around the city, or in periurban areas located at higher altitudes (above 3,500 m).

### Adaptation to climate change

Changes in climatic patterns have already been affecting urban farmers in Quito. Frequent droughts and extreme weather events, resulting in intense rain and floods, are forcing families to grow more resistant crops and improve soil conservation. For instance, families who were used to only cultivating corn and potatoes must diversify their production and plant Andean crops that have greater nutritional value, higher soil protection potential, and lower water needs, such as quinoa, oca, apio or chago. In addition, urban farmers are learning to protect the fragile natural resources and environmental quality in Quito, especially those families living close to the páramos or using water from streams that originate in the glaciers around Quito.

In this spirit, the Environmental Fund has allocated small grants to environmental NGOs helping local farming communities improve the conservation and sustainable management of the páramos ecosystems and the degraded areas around the city (i.e., in the semi-arid Andean ecosystems of the Volcan Ilaló), while improving their productivity and diversifying their crops. For instance, the Environmental Fund is supporting the NGO Ecopar in its work to create an agro-ecological farm in the periurban area of Lloa, which will secure the livelihoods of isolated poor families through organic production, create a micro-enterprise of product commercialisation, and protect fragile soils against the use of chemical pesticides and fertilisers.

Since the lack of affordable land and housing in the city centre has forced indigenous and migrant populations to establish their shelter in the slopes and hills around Quito

*Quito receives part of its potable water from the Antisana Glacier, whose size decreased 7 to 8 times faster in the 1990s than in previous decades – the Antisana shrank by 23 per cent between 1993 and 2005 (Francou et al., 2000; Cáceres et al., 2005).*

and since many of them depend on urban agriculture land to meet their food needs, tackling climate adaptation will require thinking and re-thinking structural development planning in the city. This means evaluating current land-use decisions, improving housing and economic opportunities for poorer populations, and improving the coordination of municipal agencies working on climate change in the city.

Adapting urban food systems to climate change impacts also requires decision-makers, planners, municipal corporations, and NGOs to engage in large-scale concerted efforts to improve the protection of river, groundwater, and aquifer resources in Quito, increase the efficiency of water and irrigation systems, and address sensitive issues such as land tenure and growth policies.

Today, a main challenge in the further development of sustainable and equitable local food systems in Quito is the integration of climate adaptation into the reality of decision-making processes of all relevant municipal departments. Short-term economic interests, large-scale development projects, and abrupt political decisions are still marginalising environmental and social considerations. Even if urban agriculture in Quito is supported by projects within AGRUPAR and the Environmental Fund, local agencies lack the concrete tools, networking and coordination capacity, as well political power, to make climate change adaptation and urban agriculture a long-term strategy in Quito.

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#### Notes

1) Between 1939 and 1998, the Andean region saw an increase in average temperatures of 0.11°C per decade against a global increase of 0.06°C per decade (The Government of Ecuador, UNDP, and Ministry of Environment, 2008).

2) <http://www.conquito.org.ec/agrupar/>

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