CLIMATE PLANNING AND LOCAL GOVERNMENT: ACTORS AND CLIMATE CHANGE MEASURES

LUISES LACAS
Arquitectura, Universidad Indoamérica, Ambato, Ecuador

Urban development based on anthropogenic systems led to evident urban transformations on a global and local scale. Climate change is the product of these transformations, characterized by weather patterns and ecological systems alterations. These alterations cause impacts on urban dynamics, which generate severe social consequences. It becomes imperative to assume the inevitability of the climate phenomenon and adopt a new management model with adaptation and mitigation actions. The research addresses the climatic phenomenon in Ecuador, specifically in the urban area of Riobamba, emphasizing its planning instruments. The objective is to recognize the scope of local instruments and plans related to climate change and to identify actors involved through a map of actors according to their level of engagement and support for climate change action. The research contemplates a descriptive methodology with a qualitative approach using theoretical and argumentative techniques. The research considers documentary and fieldwork through methods such as documentary analysis, unstructured observation, in-depth interviews with strategic actors, case studies, and self-completed perception surveys of available subjects, corresponding to an exploratory and descriptive level. The results show that the local government did not consider initiatives aimed at climate planning and, despite programs and projects that seek to solve environmental problems, they need to be developed in detail or linked as measures against climate change.

Keywords: Mitigation, Adaptation, Governance, Engagement.

1 INTRODUCTION

Globally, many countries have already raised awareness of the climate change problem, resulting in agendas, pacts, strategies, and actions to counteract its effects. Despite this, 51% of cities worldwide still need a territorial approach to mitigate their impacts or to enable them to adapt. Only 27% of Latin American cities report a climate action plan (Carbon Disclosure Project 2021). Ecuador presents challenges in its multilevel governance and a need to involve all stakeholders in the territory, according to the European Commission (2019). It also indicates that the climate change component should be included in planning and development plans. In addition, these plans must be linked to their realities (Enriquez 2020). The National Climate Change Strategy ENCC 2012-2025 (Ministry of Environment 2012) is the primary national instrument facing the climate emergency. It sets out policies, measures, and actions; however, it emphasizes local governments should also implement them through their instruments. Based on the ENCC, eight sectors of action are proposed for adaptation and five for mitigation. At the provincial level, for Chimborazo, there
is a Climate Change Plan (Ministry of Environment 2014). However, this document presents
general guidelines with an administrative approach.

Within the province of Chimborazo, the canton of Riobamba has updated its Development and
Land Use Plan PDOT 2020-2030 (Decentralized Autonomous Government of the Municipality of
Riobamba 2020a) aligned with the national ENCC agenda. Still, the plan needs to recognize the
climate phenomenon sufficiently. According to the findings, there need to be more specific
mitigation and adaptation actions that should be included in a climate action plan. PDOT 2020-
2030 exposes projects and programs aimed at counteracting pollution, others that promote the
conservation of ecosystems, and waste management plans. All of these are mentioned in a general
way, included in various management goals, but not linked to climate change and without an
obvious roadmap, making the need for a climate plan apparent. A climate change plan is a strategic
planning instrument that complements local plans, incorporates short and medium-term actions
(Adapt-Chile and EUROCLIMA 2015), and facilitates the search for financing (Inter-American
Development Bank 2016). The elaboration of a climate plan contemplates different stages, and, as
mentioned by Calero and Carrión (2021), precedents must be considered, in other words, analyzing
and assessing current policies and tools. This research focuses on the activities of this first stage
before designing a plan, constituting an identification and typification of current policies expressed
in ordinances, plans, programs, and studies. It also identifies relevant actors and their degree of
engagement and support for climate change actions.

2 METHODOLOGY

The objective is to recognize the scope of local instruments related to climate change and identify
actors involved locally through a map of actors. The documentary analysis allows for identifying
actions focused on mitigation or adaptation and determining the relative frequency of incidence in
the sectors established by the ENCC. The actions are also classified according to the five types of
interventions proposed by Calero and Carrión (2021) to determine the order of prioritization. The
unstructured observation and the twenty-two case studies are developed as fieldwork to identify
actions carried out in the territory by various actors. The interviews with five municipal directors
of relevant management areas as strategic actors and the self-completed surveys were taken from
fifty-eight local government officials to learn about actions in progress and projected for the future,
also to specify the local actors who are involved in initiatives and those who are not yet involved,
in addition, to highlight flaws within the administration and clarify the current vision regarding the
climate phenomenon.

3 RESULTS AND DISCUSSION

Based on the documentary analysis of the local plans: the Development and Land Use Plan PDOT
2020-2030, Land Use and Management Plan PUGS 2020-2030 and the Mobility Plan PM
(Decentralized Autonomous Government of the Municipality of Riobamba 2020b) and others
documents, 117 actions or measures related to climate change were examined. All actions or
measures were identified in the second volume of the PDOT in the "Management Model by
Development Axes" matrix (pages 180-228) as programs or projects linked to a specific goal. It
should be noted that the PUGS, PM, Urban code and accountability reports do not substantially
address climate change. The PM outlines pedestrianization projects, efficient mobility, and
alternative modes of transportation but does not address the emissions issue. Although its proposals
are valid, they are not expressly stated as actions to address climate change but could be linked as
mitigation actions. Regarding the PUGS, only the standard requirements of a plan are developed,
but it is not linked to climate change. Of the 117 PDOT 2020-2030 actions, 18.80% correspond to
adaptation-only measures, 29.92% to mitigation-only measures and 51.28% involve both types. See Table 1.

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<th>Author or organization</th>
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<td>Local plan</td>
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<td>Riobamba Canton Mobility Plan PM</td>
<td>Local plan</td>
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<td>Accountability report</td>
<td>Annual report</td>
<td>2021 &amp; 2022</td>
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<td>Decentralized Autonomous Government of the Municipality of Riobamba</td>
<td>Urban code for the Riobamba Canton</td>
<td>Urban code and regulations</td>
<td>2019</td>
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<td>Ministry of the Environment</td>
<td>Chimborazo Climate Change Plan</td>
<td>Regional plan</td>
<td>2014</td>
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Regarding mitigation measures and in correspondence to the ENCC sectors, the actions or measures have the highest incidence according to their relative frequency in the Energy sector, with 52.99%, and the lowest incidence, with 21.37%, in the agriculture sector (Figure 1).

![Figure 1. Relative frequency of actions and measures related to mitigation.](image)

Regarding adaptation measures and in correspondence to the ENCC sectors, the actions or measures have the highest incidence according to their relative frequency in the Risk Management sector, with 38.46%, and the lowest incidence, with 10.26%, in the health sector (Figure 2).

According to Calero and Carrión (2021), 59.83% of the total actions and measures and the types of interventions are project proposals for climate finance. Meanwhile, 6.84% of the interventions correspond to tools to formulate climate action plans (Figure 3).

At the local level, the actors that make decisions are the Mayor's Office and the Municipal Council, actors in the inner zone of Figure 4. However, their involvement needs to be improved. The Municipal Council has a more neutral position, and, according to interviews, many political decisions are influenced by populism and favoritism. Public sector actors show more significant support from the different management units within the local government to public enterprises and public academia. The most involved management units are mobility, environmental management, public works, and territorial planning. On the contrary, the management units less involved are those of municipal services, tourism, social and human development, etc. As part of the local
administration, all management units should have a high degree of involvement and carry the commitment to address climate change as a principle.

Figure 2. Relative frequency of actions and measures related to adaptation.

Figure 3. Types of actions and measures according to climate change intervention classification.

In the private sector, private academia stands out for its support and level of involvement; however, other actors, such as the media and networks, are not involved but do show support. At the other extreme, private service providers are neither interested nor have they demonstrated tangible support, as well as some social groups, such as cabs and urban buses, are the most reluctant to take action for change. Many actors at the intermediate level are relevant but need to be sufficiently involved, and the actors at the external level are relevant but completely disengaged. The disconnection between some actors and others is evident. If, in common issues within urban governance, it is difficult to associate them, it will be even more so in terms of climate governance.

Concerning the case studies, twenty-two initiatives carried out by local actors were examined, including plans, such as the sustainable mobility plan; projects, such as the recovery of streams; and ordinances, such as the integrated management of sanitary waste. However, these initiatives are still in the proposal phase or at an initial stage and are not linked to the climate phenomenon. On the other hand, smaller initiatives have been implemented, such as planting urban trees.
The surveys show that 73.70% do not consider that there are specific actions or a plan to address climate change, as opposed to 82.50% who believe the climate phenomenon to be a latent problem. 98.20% of those surveyed also showed that awareness and environmental education programs are needed. Riobamba has the strength of having an updated local plan and several initial diagnoses with current data. Another strength is the interest in participatory initiatives with the local government; according to the surveys, 89.50% expressed attention to environmental issues and a willingness to make decisions about new plans and regulations. A survey weakness reinforces the need for coordination between actors in the territory. Actions and initiatives exist but are isolated, disconnected, and not registered in some planning sectors.

4 CONCLUSIONS

In Ecuador, there are policies at the national level that serve as a basis for better local planning. There is a willingness to address environmental problems. Still, there needs to be a local climate plan, measures, or actions directly connected to climate change from the proposed projects and programs. Although they are not expressed as climate change measures or actions, there are more actions related to mitigation than adaptation. Therefore, greater emphasis is needed on adaptation proposals, given that a city like Riobamba is more exposed to its effects.

Existing measures or actions that could be linked to climate change concerning mitigation should be strengthened for the Agriculture and Industrial Processes sectors, even though Riobamba does not contribute significantly to emissions and the processes corresponding to small and medium industries are not as harmful. Concerning adaptation, it is necessary to strengthen possible actions or measures in the health sector and priority attention groups. As stated in the PDOT 2020-2030, one of the impacts of climate change will be less quantity and quality of water, food insecurity, increased migration, and increased vulnerability in health. It is also essential to pay attention to the human settlements sector since informal human settlements in landslide and flood zones are one of the biggest challenges in Riobamba. For the types of climate change intervention, according to Calero and Carrión (2021), there is a lack of tools for urban-territorial management, such as partial plans, road maps, intervention guides and agendas, and tools that serve as input to formulate the climate action plan, i.e., studies and diagnoses with parameters directly linked to climate action.
Studies with accurate and updated information on specific indicators such as air quality, gas emissions, and water pollution are also required. These quantitative studies will be used for future research. In addition to the data acquired in this research, a correlation can be obtained between the sectors' contribution to the climate phenomenon and the adaptation or mitigation actions or measures related to the local plans. Investigating the level of financing and tools allocated for climate actions is also relevant. The objectives of this research can be extrapolated to other contexts, that is, other cantons of the province of Chimborazo, and thus obtain a complete vision at the regional level and corroborate what is projected in the Chimborazo Climate Change Plan of the Ministry of the Environment (2014) or to perform a correct update of the document.

Another point to improve is strengthening climate governance by activating citizen spaces or consultative councils and regulatory proposals such as ordinances, regulations, and bylaws. All stakeholders and socialization activities should be involved through participatory processes such as workshops, roundtables, and debates, which would collectively construct a climate plan. Finally, discussion on the subject should be promoted from different perspectives of society. In Riobamba, perhaps the impacts of climate variation are still moderate, which is why it is necessary to act in advance, integrating all citizens, public and private sectors in collective initiatives and actions in search of common benefit.

References
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