



**Analysis, Evaluation, and Implementation.** The methodology for the Master Plan included three stages: due diligence, diagnostic, and formulation. The three stages contemplated community mapping and participatory planning workshops with different communities to understand their relationship with the river at a cultural and economic level, and to identify their knowledge of ecological restoration.

The diagnostic stage included a resilience mapping exercise using an adaptation of the SAGE (Sustainable Adaptive Gradients in the Coastal Environment) framework for assessing resilience in infrastructure projects. Workshops with stakeholders such as government, enterprises, educational institutions, and communities were held to assess local resilience issues.

The results of these workshops allowed the identification of the main issues facing the River:

- The importance of the river as a city landmark and an urban development axis
- The importance of risk management within the river basin
- The environmental damage caused to the river and the need for ecological restoration
- The lack of social appropriation surrounding the river (despite its ancestral and ecological importance)
- The weakened governance of the region could prevent the project from being carried out in the long term

These results guided the formulation of the Master Plan's principles:

- The River as an Axis for Sustainable Urban Development
- The River as an Alive System
- The River as a Safe System
- The River with a Specific Identity Associated with it
- The River as a Project That Becomes a Reality for the City

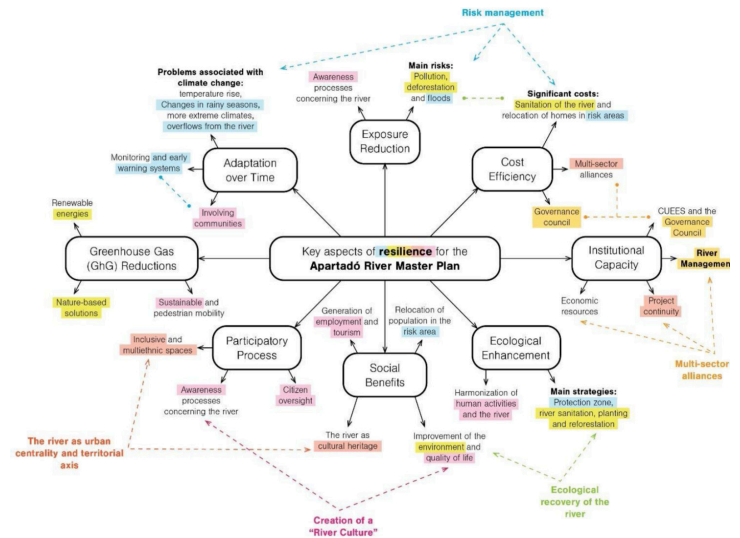
This diagnosis stage also involved community mapping workshops focusing on urban and rural areas to spatially identify issues relevant to the project. These workshops included the participation of ancestral communities, community leaders from urban neighborhoods, youth leaders, and governmental entities.

The formulation stage included more workshops to communicate the diagnosis results and formulate proposals with the different stakeholders. Some of these included:

- Designing public amenities involving environmental education and disaster preparedness
- Involving ancestral communities in ecological restoration decisions and projects
- Implementing community monitoring and citizen science involving the river basin's restoration and clean-up processes
- Designing Eco-Resilient neighborhoods along the river basin to manage rainstorm water
- Promoting nature-based tourism focused on ancestral,

community, and eco-tourism

- Mainstreaming ancestral tourism as a way to preserve the cultural and ecological memory of the river



**Figure 2.** Resilience mapping exercise with key stakeholders

**Future Implementation and Concluding Thoughts.**

“Implementing climate adaptation strategies can be challenging for a city like Apartadó, which has specific conditions tied to biological and cultural diversity” (Vélez-Duque, J; Arteaga-Morales, S. 2022)

The Apartadó River Master Plan addresses risk management, governance issues, environmental degradation, social inclusion, and cultural representation to create a proposal that strengthens disaster response within the city. It also promotes climate and environmental justice strategies, cultural appropriation programs, and public-private partnerships to tackle low governance.

The methodology used in this project demonstrates the importance of centering adaptation interventions around communities and local stakeholders that can guide the narrative of disaster response while incorporating unique cultural elements into risk management. Thus, allowing for a climate and environmental justice approach that promotes social empowerment within communities and enables decision-support frameworks for the project.

Since its formulation in 2020, the Apartadó master plan reflects overall progress in several key areas. The initiative has focused on enhancing public spaces and environmental restoration, exemplified by the public competition held with the Colombian Society of Architects for the initial stages of the “Parks of the River Apartadó.” In this sense, the formulation and contracting of the implementation of nodes such as “Ortiz-Velez” and “San Fernando” have been key milestones. Environmental efforts include the planting of over 96,000 trees along the Apartadó River’s banks and the organization of five successful river clean-up days (Municipio de Apartadó, 2023).

Another crucial facet of the master plan is the development of wastewater infrastructure and treatment. Significant steps have been taken, such as contracting the designs for the Apartadó Municipality Wastewater Treatment Plant and investing in the renewal of aqueduct and sewerage networks. Under the Sanitation and Wastewater Management Plan (PSMV), a large-capacity wastewater collector is under construction, alongside stormwater collectors in “Ciudadela Nelson Ospina Gómez” and “San Fernando.” The rural sector is not overlooked, with the construction of 775 UNISAFAS “sanitary units” contributing to improved sanitation (Municipio de Apartadó, 2023).

While it is essential to acknowledge these notable achievements, the specific timeline for the implementation of workshops and initiatives remains a key consideration. Positive changes are evident in the form of improved environmental conditions, expanded public spaces, and upgraded wastewater infrastructure. The success and benefits of the master plan are becoming increasingly tangible, positively impacting the community and setting the stage for a more sustainable and improved future for Apartadó.

This project argues that by strengthening resilience through tailor-made solutions within socio-ecological systems, development planning has higher opportunities to face the challenges that the climate crisis will bring.

## References

- Municipio de Apartadó. (23 March 2023). *Transformación de Apartadó de cara al río*. Alcaldía de Apartadó. <https://www.apartado-antioquia.gov.co/publicaciones/45/transformacion-de-apartado-de-cara-al-rio/>.
- Vélez-Duque, J., Arteaga-Morales, S.M. (2022). Apartadó’s River Master Plan: Mitigating the Risk of Flooding in the Face of Climate Change in a Biodiversity Hotspot. *Environ. Sci. Proc.*, 15, 44. <https://doi.org/10.3390/environsciproc2022015044>

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