

Buenos Aires, Argentina

# Buenos Aires strengthens natural resources to protect low-income communities

With worsening climate impacts, Buenos Aires is particularly affected by flood events. To mitigate flooding, the City is undergoing an extensive program to update and improve its river basins to better handle flood events and protect low-income communities most at risk while also extending access to drinking water.

Lake Soldati and its adjoining communities.



## What are the key lessons learned?

Buenos Aires sits on the Argentinian coast with many nearby river deltas and watersheds. As a water-centric City, its residents face increasing risks of flooding. The combination of poor stormwater drainage across the City, due to recent and rapid urbanization, and increasing rates and intensity of floods has put the low-income and more vulnerable populations at serious risk. Many locals cross over river basins to commute to work or school and flooding can strain access to resources or services. Nearly 700,000 people live in the City's targeted watersheds and approximately 46,000 mostly low-income residents live in close proximity to the flood-prone Lake Soldati.

In recent years, Buenos Aires has focused on flood protection in the City. In 2005, through the Ministry of Urban Development and Transportation (MDUyT), the City released a Hydraulic Master Plan to set in motion a path to protect its residents from the risk of eight floodable river watersheds in Buenos Aires. In particular, the City is focusing large capital investments in the Lake Soldati area, in the Cildáñez river basin, where a significant portion of low-income residents live.

Throughout the course of the project, the Ministry of Environment and Public Spaces' Urban Drainage Unit work to develop flood retention areas, delaying flows to the Riachuelo River that often experiences flooding. The Urban Drainage Unit will also construct infrastructure networks to improve water distribution and wastewater collection, construct drainage channels to strengthen existing infrastructure, and enhance the urban public space.

Ultimately, this adaptation project will reduce the impact that flooding has on Buenos Aires' communities and drastically improve living conditions for the low-income residents most intimately connected to these areas and most at risk.

The project will have multiple benefits stretching across environmental, social, economic, and health improvements.



Restoring Lake Soldati's natural resources will increase its biodiversity.

### Climate

The Buenos Aires flood prevention project will upgrade the City's stormwater retention and drainage systems to better protect against 10-year rainfall events. With improved stormwater management infrastructure in place, the communities will be more resilient against future climate events.

### Inclusivity

One of the sites for flood protection is Lake Soldati, surrounded by mainly low-income residents. Flood prevention measures will significantly impact these communities with decreased risk of flooding and damage to communities, improved economic security, sanitary conditions, and access and reliability of essential services.

Case Study Type:  Program	Primary Sector:  Adaptation
ICA Pillar:  Impact	Primary Impact:  Environmental Quality

## How might these lessons be used in your City?

### Understand the future of climate impacts

The City of Buenos Aires is aware of the dangers of climate change and has taken several necessary steps to adapt its natural lands to better handle future climate events. From March 2001 to January 2006, the City developed the City's Hydraulic Master Plan. This was the first planning document related to hydraulics, or the movement of water, in the City.

The City's vision for the Plan was to protect residents and mitigate the harmful impacts of flooding on the region.

Furthermore, to inform the Hydraulic Master Plan, Buenos Aires has created a Territorial Model for the City that presents City data on a time scale of fifty years. This report<sup>[1]</sup> is available on the City's website as a data resource including urban population, economic, climate, and infrastructure-related data. The Territorial Model presents data related to the "Current City" representing the City as it is today and the "Desired City" representing the future city Buenos Aires is aiming to be.

After the Hydraulic Master Plan was published, the City of Buenos Aires created the group known as the Special Projects Unit of the Hydraulic Plan. The group was created to manage and implement the projects laid out in the Hydraulic Master Plan and the Water Risk Management Program (a program to implement adaptation work on the Arroyo Maldonado basin, improve green space, tree plantings, and more<sup>[2]</sup>). This group is mandated to complete the execution of these plans and their many projects<sup>[3]</sup>.

### Other flood adaptation efforts in Buenos Aires

In addition to the efforts that address flooding in the Lake Soldati and Cildáñez river basin area, the World Bank is assisting with two other large river basins in Buenos Aires: the Maldonado and Vega basins. The Maldonado and Vega Basins cover the City's central area and hold over 30% of the city's area and population. Both of these river basins are home to mostly middle- and upper-income residents while the Cildáñez river basin, in the southern portions of the City, is home to low-income communities, often living in informal housing. The Cildáñez basin holds 16 of the 43 total informal settlements in Buenos Aires<sup>[4]</sup>. The City has chosen to focus its attention on equitable implementation as these flood mitigation projects are ongoing across the City. It is important to Buenos Aires that they approach each project with the same level of investment and quality no matter the economic standing of the populations in each rivershed.



### Ensure technical expertise for realized impacts

The Cildáñez rivershed adaptation project is organized through the Ministry of Environment and Public Spaces' Urban Drainage Unit with assistance, as needed, from the Ministry of Finance and the Secretariat of Habitat<sup>[5]</sup>. Naturalizing a water body is a difficult task that involves integrating multiple disciplines such as sanitation, City water supply, stormwater management, ecological restoration, and more. In the case of Lake Soldati, the implementation team is focused on mitigating flood risk. This involves first and foremost cleaning out the lake, especially the bottom, to make room for additional water storage. As part of the sanitation efforts, nearly 230 ton of waste were collected<sup>[6]</sup>. Additionally, the City has cleaned out the interior channels of the lake, removing large amounts of liquid mud, opened up ditches to improve drainage, installed water jets to aerate the Lake and provide sufficient oxygen levels, and rerouted sewage to a separate pumping station to avoid lake water contamination. The project also involved the construction of a flood storage area, including gates and a drainage system which controls the groundwater system and reduced flood volumes. Overall, the remediation and adaptation work for Lake Soldati involves a balance between infrastructure systems so that the Lake is able to operate sustainably with minimal impact on the neighboring communities. With the completion of the Lake sanitation, various flora and fauna began to appear and make the Lake home – a positive sign for successful naturalization of the Lake.

### Lake Soldati Communities

Villa Soldati, one of the main communities near Lake Soldati and one of the largest social housing communities in Buenos Aires, was built between 1971 and 1978 and is approximately 19 hectares in area<sup>[7]</sup>. The Buenos Aires Secretariat of Habitat and Inclusion, with help from the Ministry of Economic Development, has brought needed resources and support to Villa Soldati through their work in redeveloping the area as summarized in a 2012 report<sup>[8]</sup>. The Secretariat of Habitat and Inclusion is working for the betterment of Villa Soldati by creating community centers, building bus stops, and improving public spaces.

### Procure funding that influences and supports project development and community engagement

Most of the funding for the river basin adaptation projects is coming from the World Bank. The total project cost for the three basins Cildáñez, Maldonado, and Vega is US\$326M. The World Bank is providing US\$200M and the City of Buenos Aires is covering the remainder. The MDUyT's Special Projects Unit of the Hydraulic Plan (UPEPH) is in charge of managing the fund and the project's implementation. World Bank funded projects often come with support from the agency and a set of requirements, especially around reporting and community engagement. As funding is often the limiting factor for such climate-related projects, especially targeting low-income communities, it can be beneficial to procure funding from a source that can provide guidance and rigor around the successful implementation of the project.

# Improving quality of life and reducing flood risk through collaboration



Increased resilience in low income communities



Reduced economic burden for residents



Reemergence of wildlife



**Balance urbanization with infrastructure investment**



**Maintain water resources for sanitation and quality of life**



**Involve local communities to build trust and ensure success**



**Stormwater**  
Protection against 10-year rainfall events and frequent floods



**Sanitation**  
230 tons of waste collected from Lake Soldati



**Community outreach**  
Sharable resources and City representatives on-site

## Implement projects that address multiple needs and provide countless benefits

The adaptation of Lake Soldati and the resulting reduction in flood risk for the area will have significant benefits for the communities including environmental, social, economic, and health-related improvements. Firstly, the rehabilitation of the Lake involves an extensive clean-up and outreach campaign which improves the conditions for communities, attracts flora and fauna to the area, and ensures that residents have the practical knowledge and resources needed to keep Lake Soldati clean.

### A cleaner Lake Soldati means healthier neighboring communities as sanitary conditions improve and contaminated water levels are minimized.

Socially, this project significantly lowers the flood risk for low-income communities and contributes to the development of these communities by ensuring reliable access to essential services such as drinking water. Similarly, the project delivers economic security for these communities. After flooding and other climate incidents, low-income communities are often most impacted and least likely to be resilient enough to recover quickly. With reduced flood risk, these communities are also at less of an economic risk<sup>[9]</sup>.

### Project milestones



## Make engagement, communication and community growth part of the project

As part of the flood protection work across the City, there are several community engagement efforts that have been undertaken. In 2011, the Secretariat of Habitat and Inclusion (SECHI) was formed to coordinate engagement and foster relationships with targeted communities throughout

Buenos Aires. As part of their mission, SECHI has an office located within the communities near Lake Soldati to build relationships with these particular communities. SECHI, with support from NGOs in the area, conducted many forms of engagement to get the community involved including door-to-door outreach, workshops with children, and focus group meetings. One method that was particularly successful was the “Wish Box” where people were invited to submit their ideas for the project<sup>[10]</sup>.

Through the World Bank funding, there are ongoing engagement efforts such as generating shareable communication for city dwellers and education programs. For the communication aspects, the Buenos Aires Office of Communication is working to create community documents and resources and host informal seminars that educate and raise awareness of hazards and preventative actions to be taken during a flood event. For education, there are two programs planned. The first is organized through the Ministry of Education for the construction sector and education professionals to cover general knowledge about flood hazards, risks, vulnerability, and prevention. The second education effort is through the Ministry of Justice and Security (MJS) and supports the ongoing emergency first respondents program (Primeros Respondedores en la Emergencia), especially targeting the populations living in slums and poor neighborhoods of Buenos Aires<sup>[12]</sup>.

### Keep moving forward

Recognizing that flood events are the city’s greatest risk, Buenos Aires has prioritized climate adaptation projects. These projects positively impact a significant portion of the City’s population, including a large number of low-income residents. The watershed adaptation projects make a stronger Buenos Aires that is resilient and prepared for the future of climate change – including the low-income and marginalized communities.

### References

- 1 <https://www.mininterior.gov.ar/planificacion/pdf/planes-loc/CABA/Modelo-territorial-2010-2060.pdf>
- 2 <https://www.buenosaires.gob.ar/desarrollourbano/desarrollo/planes/programa-de-gestion-del-riesgo-hidrico>
- 3 <https://www.buenosaires.gob.ar/desarrollourbano/desarrollo/planes/plan-hidraulico>
- 4 <http://documents.worldbank.org/curated/en/287961468328119648/pdf/PAD830-REVISED-OUO-9-R2016-0110-2.pdf>
- 5 <http://documents.banquemondiale.org/curated/fr/142861468008743600/pdf/ISDS-Print-P145686-01-28-2014-1390968222209.pdf>
- 6 <https://www.buenosaires.gob.ar/noticias/el-lago-soldati-recupera-su-ecosistema-original>
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