BUENOS AIRES

PILOT 3. Francia Street Rain gardens,
San Martín (Buenos Aires), Argentina

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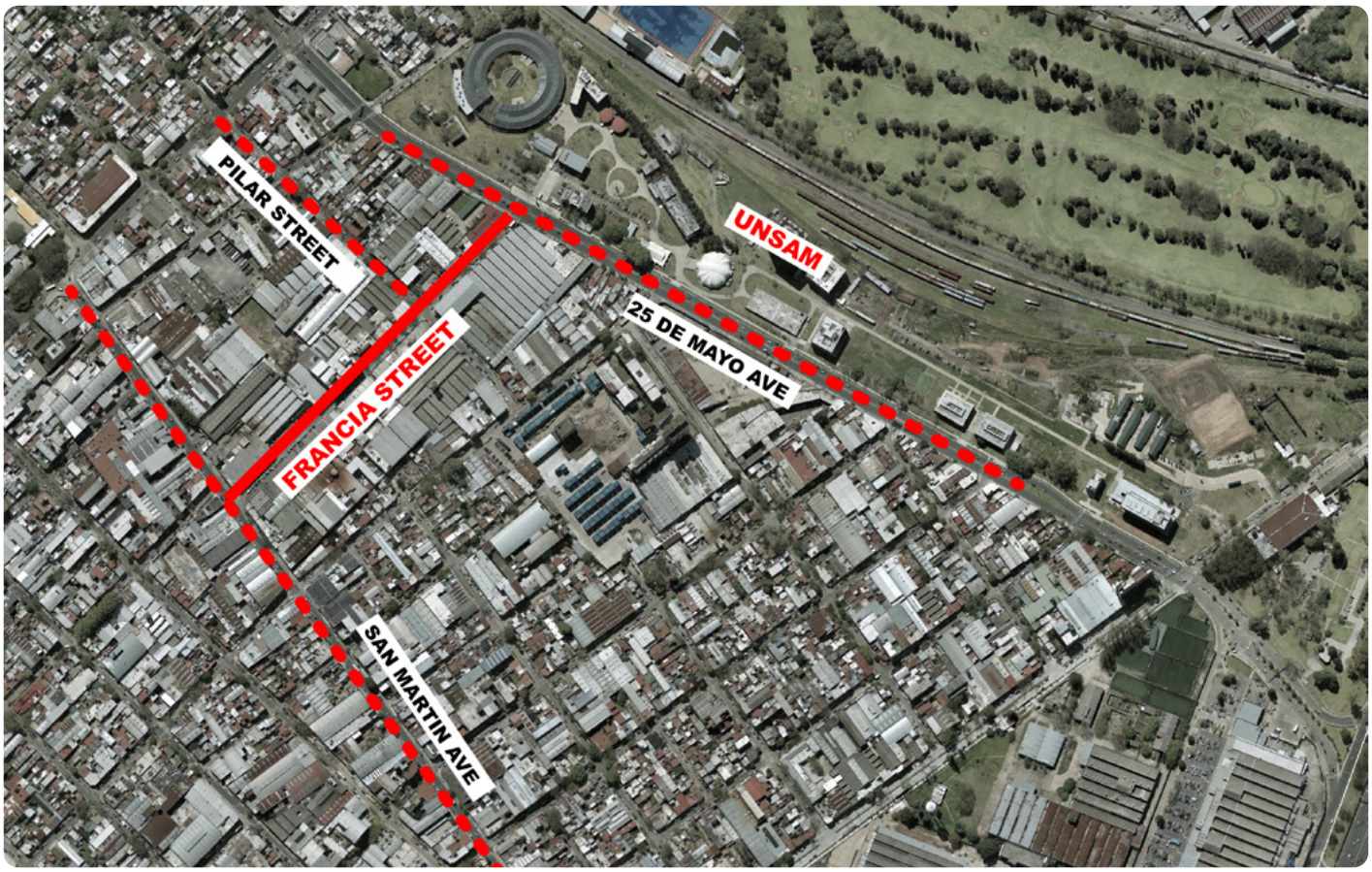
Start date: April 2020 **End date:** August 2024

What and Where?

Location:	Francia street, San Martín.
NBS type, and habitat/s:	To be created or restored: Rain gardens created.
Ecosystem services:	Water quality improvement (pollutant removal), Flood Risk Reduction (hydraulic protection), Land value uplift, Carbon sequestration and storage, Air quality improvement (pollutant removal), Amenity and aesthetics, Biodiversity increase, Temperature regulation.
Management & maintenance:	City managed and maintained.

Map

Medrano Basin, San Martín and Villa Chacabuco



Location of the rain gardens in Francia Street, Villa Chacabuco, San Martín

Why?

In 2023, the City of San Martín (Province of Buenos Aires, Argentina) carried out comprehensive upgrading works along Francia and Pilar Streets, which brought about an opportunity to incorporate linear raingardens (RGs). Specifically, a proposal was developed for Francia Street in the section that connects Av. San Martín and Av. 25 de Mayo, an industrial area with an informal settlement nearby. Francia Street acts as an important axis that connects a public transport corridor (Av. San Martín) with the main entrance of the National University of San Martín (UNSAM) and is traversed daily by local residents, industrial workers, and the higher educational community of UNSAM.

Consisting in a series of RGs, the Francia Street initiative is a pioneering pilot project in the Buenos Aires Metropolitan Area. It was designed with the aim of testing Sustainable Urban Drainage Systems (SUDS) and NBS for the region, for the wider goal of developing a Blue-Green Infrastructure (BGI) network.

When?

The pilot was installed within the following timeline:

2021–2022	masterplanning and design
2022–2023	construction
2023–2024	mural painting
2022–2024	monitoring of indicators
2024	intercept survey

How?

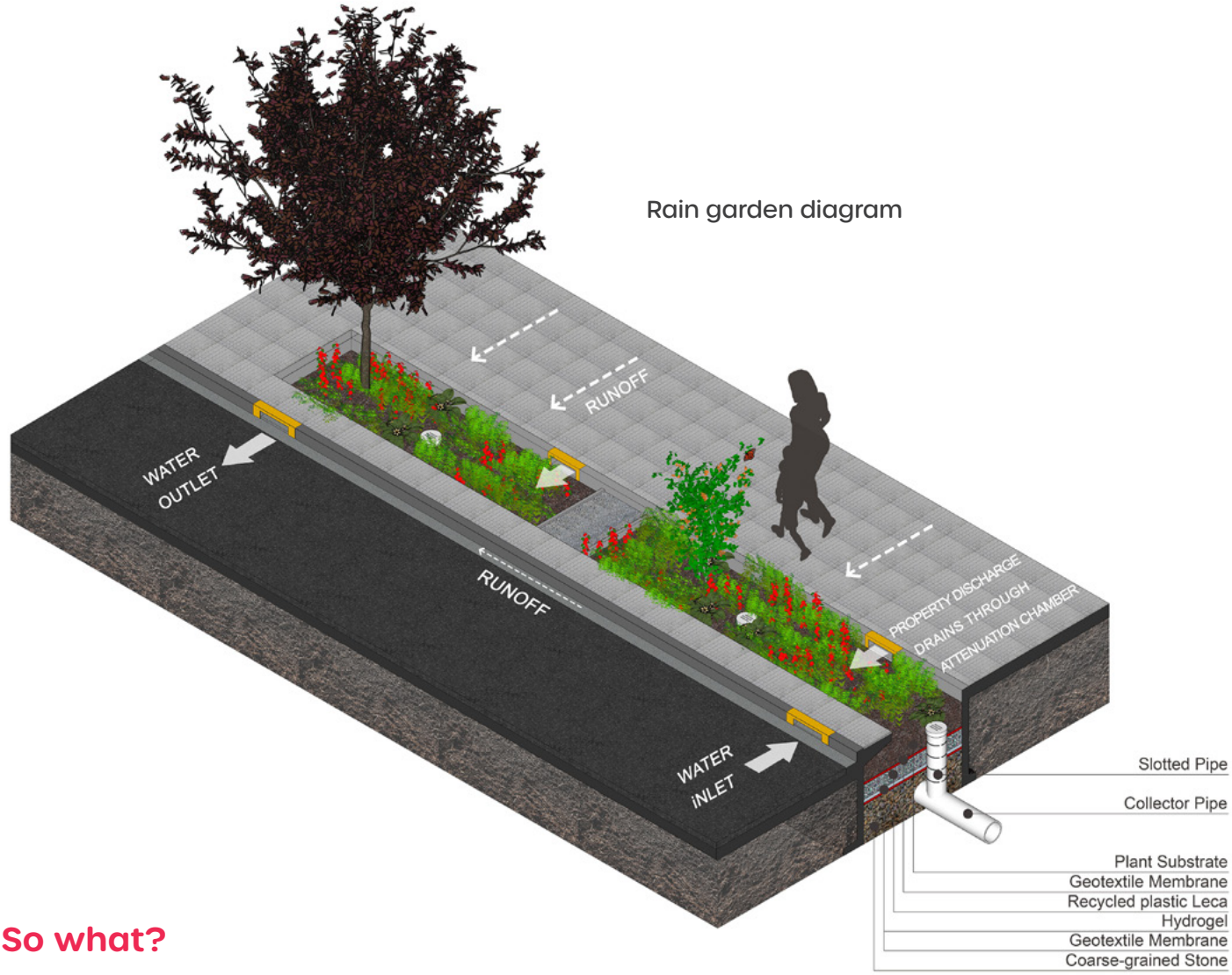
The main objective of RGs is to manage stormwater, reducing pressure on the drainage system and improving water quality by reducing its pollutant load. This is achieved through the retention and accumulation capacity the RGs provide as well as mechanical and biological filtering.

The Francia Street project aims to demonstrate that there are alternative solutions to the traditional approach of grey infrastructure that are capable of offering a cost-effective and efficient approach to stormwater management while also offering additional benefits such as improving water quality, reducing temperature by adding absorbent soil, increasing biodiversity by incorporating native and spontaneous species, improving air quality, and creating amenity, among other ecosystem services.

Stormwater runoff from streets and sidewalks together with rainwater from property discharge drains is directed towards the RGs either directly or indirectly. Within the gardens, which feature different layers of substrate, water is retained and stored until it reaches a certain level, at which time partially filtered water is redirected through a pipe to the stormwater network, enabling a greater volume of untreated water to enter the gardens. The water accumulated in the RGs is then used to nourish the vegetation growing in them, while a portion infiltrates into the natural terrain. This reduces pressure on the stormwater system that discharges into the Medrano Stream while also improving water quality, leaving part of the contaminants retained so that they can be treated by phytoremediation by the vegetation.

Rain gardens in the context of the comprehensive upgrading works along Francia Street

Rain gardens in action during rainfall



Rain garden diagram

So what?

CBA results

The benefits provided by RGs were measured and valued through a Cost-Benefit Analysis (CBA), demonstrating their significant long-term economic advantages. The CBA for this pilot used construction costs reported by MGSM, projected maintenance costs, and the benefits of the ecosystem services provided by the project. Benefits were measured using defined indicators and case-specific value equations. When specific data were lacking, parametric methods were used to account for the benefits, which refers to using equations and prices calculated in other studies and applying them to the present case, while considering the context differences between both cases for adaptation.

The socioeconomic performance of the RGs was evaluated using Net Present Value (NPV) and Internal Rate of Return (IRR) tools. NPV assesses the value of a project by comparing the present value of expected benefits to the costs, determining if the project's benefits outweigh its costs. A negative NPV suggests the project may not be worth pursuing. IRR is a metric that estimates the annual rate of return a project is expected to generate, given its cash flow. If the IRR is higher than the discount rate for the project, it can be considered socially profitable. These tools allow the comparison of various costs and benefits while comparing the social performance or yield of alternative projects. Considering the combined costs and benefits of the RGs, the NPV was calculated as €61,499, indicating social profitability (positive NPV) for the discount rate used (5%). The project's IRR is 13%. That means the discount rate used could be increased to 13%, while ensuring the project is socially viable.

Project Partners

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