



PROVIDING TERRITORIAL AUTHORITIES WITH URBAN PLANNING AND MANAGEMENT TOOLS THAT INTEGRATE CLIMATE RISK

In Senegal, the vulnerability of territories to disaster risk is partly a result of weak urban planning and management mechanisms and capacities. The Stormwater Management and Adaptation to Climate Change Project, (PROGEP), which covers Pikine, Guediawaye, the Diamniadio Urban Pole and the Greater Saint-Louis area, has focused attention on urban resilience through integration of climate risks in the design of urban planning and management tools, at both national and local levels.

■ BACKGROUND

The peri-urban area of Senegal's capital city, Dakar, and particularly the Pikine and Guediawaye districts, has experienced recurrent flooding since the beginning of the 2000s. The flood events have serious socio-economic and environmental consequences, and are not just a result of strong rains, which moreover are intensifying due to climate change. The likelihood and consequences of flooding are also amplified by unplanned urbanization in lowlands and natural waterways, insufficient sanitation systems (sewage, rainwater and solid waste), and rising water tables.

The drought that affected the Niayes region¹ between 1970 and 1990 contributed to increased and intensified flood events. During this period, flood zones that had dried up from the lack of rain, were massively urbanized in an unplanned manner by communities displaced from the capital, as well as rural migrants. These communities settled in low elevation areas not suitable for habitat that were highly exposed to flood

risks with potentially disastrous consequences on the local economy, transport, sanitation, and living and natural environments.

Moreover, before the project PROGEP commenced operations, it had been noted that key framework planning documents that should have enabled coherent and resilient urban development in the intervention zone, were not sufficiently operationalized. This was mainly due to a lack of funds and logistical and human resources within central and local government agencies responsible for implementing the plans. Furthermore, the measures the planning documents recommended were not adequate to guarantee neither efficient planning nor management of an urban zone experiencing rapid demographic growth and highly vulnerable to climate change.

¹ The Niayes area geography is characterized by depressions and dunes resting on a shallow water table. Inter-dune depressions are composed of lakes, sometimes dried-up, and very fertile lowlands; strictly speaking, Niayes refers to the latter.



Before the PROGEP project, natural rainwater drainage routes in Yembeul Nord and other districts in Dakar's peri-urban area, were blocked by accumulated solid waste and uncontrolled building. ©ADM

DESCRIPTION OF THE INTERVENTION

PROGEP started its activities in 2012 in Dakar's peri-urban region to address the shortcomings that had been noted in the implementation of urban policy, in particular the lack of appropriate urban planning and management tools. The project provided support to central and decentralized agencies to establish more effective planning strategy and urban management tools which took into consideration risks, in particular those linked to flooding.

The role and expertise of local and national stakeholders (national directorates, municipalities, devolved technical services, non-governmental organizations (NGOs), community-based organizations (CBOs), etc.) in flood management, climate-change adaptation, urban governance and land use regulations were strengthened. The project also contributed to knowledge production and the development of decision-making tools linked mainly to hydrological status, institutional and financial diagnostics of the stormwater sanitation sector, a stormwater drainage masterplan, and mapping of flood risks. Lastly, the project also supported the drafting and dissemination of inclusive urban planning documents that integrated climate risks.

These initiatives were implemented by the Municipal Development Agency (ADM), working closely with relevant directorates such as : the Directorate for the Surveillance and Monitoring of Land Use (DSCOS), the Directorate General for Urban Planning and Architecture (DGUA), Directorate for Sanitation (DA), the National Fire Brigade (BNSP), The Directorate for Prevention and Management of Flood Risks (DGPI), the National Civil Aviation and Meteorological Agency (ANACIM), the General Delegation of the Urban Poles of Diamniadio and Pink Lake (DGPU) and the Directorate for the Environment and Classified Facilities (DEEC). The collaborations reinforced institutional actors' capacities to implement their respective mandates and will contribute to ensuring the long-term sustainability of the project's achievements. To facilitate the involvement of the institutions listed above, ADM, as the implementing entity of PROGEP, signed partnership agreements with each institution.

ACHIEVEMENTS



STRATEGIC STUDIES AND KNOWLEDGE PRODUCTION



STAKEHOLDER CAPACITY BUILDING



*see training box p.8

■ RESULTING CHANGES

New information that enabled deeper knowledge of the territory

The preparatory studies for urban planning and management documents, the development of a geographic information system (GIS) and an integrated territorial information system, and the production of maps all generated significant amounts of new knowledge on the peri-urban areas of Dakar, the Diamniadio Urban pole and surroundings and the Greater Saint-Louis area. This knowledge, which will be integrated into various national databases, allows for a clearer perspective on the current status and on developments in the territory and the climate risks it faces.

A clear vision for stormwater management

The Stormwater Drainage Masterplan for the Dakar peri-urban region provided the base for efficient, planned and coordinated responses to flooding in the territories that were most vulnerable and exposed to the phenomenon. The dissemination of the plan to various stakeholders at different levels helped to ensure harmonized understanding of the issues, goals and details of the PROGEP project. The converging analysis of stakeholders on key sensitive issues strengthened informed decision-making and promoted synergies in action within the territory. The integration of the Drainage Plan into the Detailed Urban Plans of Pikine and Guediawaye provided these local regions with a guidance tool, facilitating more efficient land use and preventing uncontrolled occupation of no-construction zones. The participatory drafting process stimulated ownership of the plan's contents by the communities who participated in the diagnostic and in various presentation and approval sessions.

A reference document for implementing integrated urban planning

The General Directorate for Urban Planning and Architecture (DGUA) working together with ADM, supervised

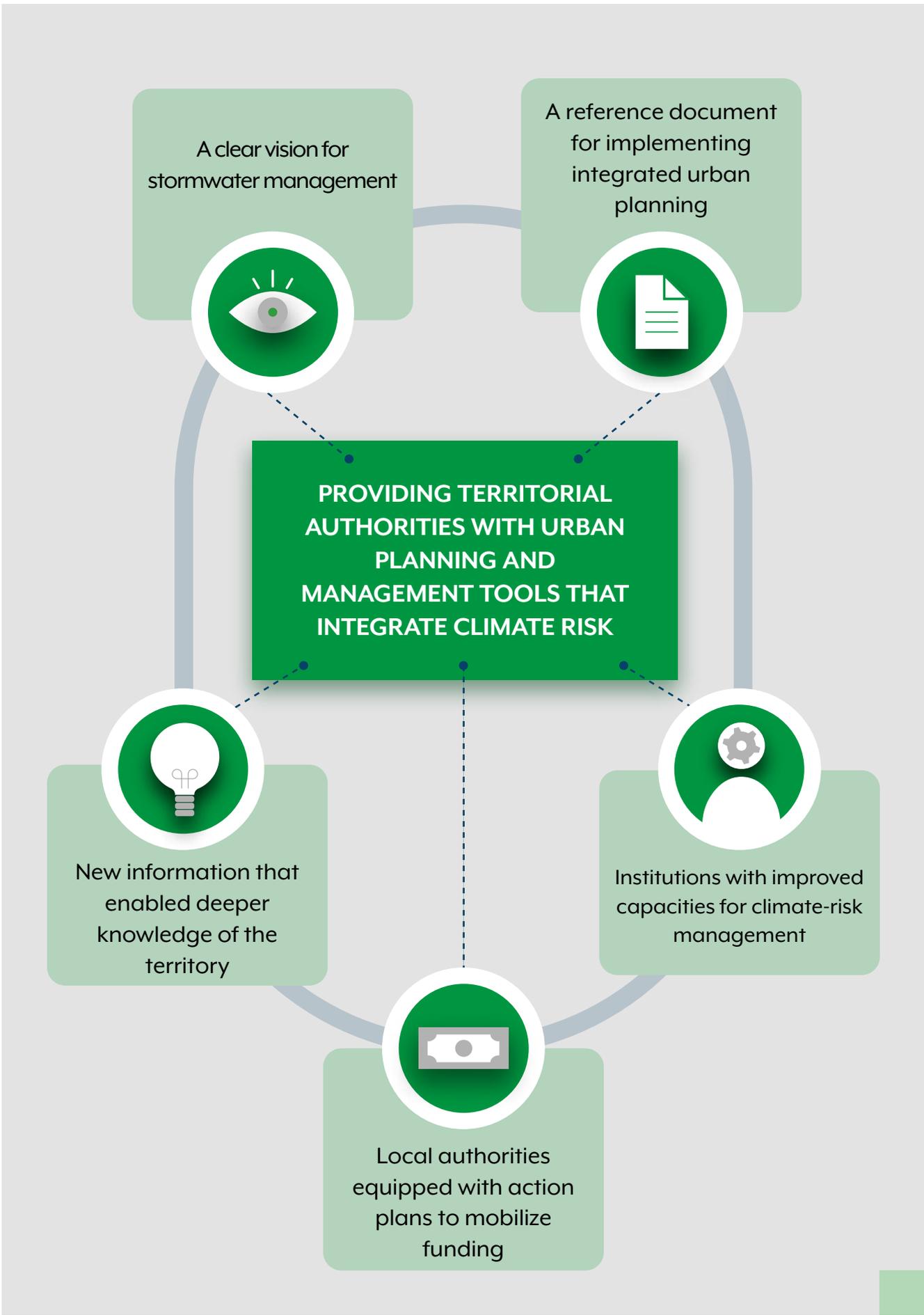
studies on the local plans for Pikine-Guediawaye and the Diamniadio Urban Pole, as well as the revision and extension of the Saint-Louis Urban Masterplan to the Greater Saint-Louis area. These studies adopted a participatory approach integrating climate risk, allowing the DGUA to familiarize itself with the particularities of such an exercise. The directorate is now equipped with a reference document and has capitalized the necessary expertise to replicate the experience in the future in other territories.

Institutions with improved capacities for climate-risk management

The project provided institutional partners with tools and expertise to better play their roles in the integration of flood risk in urban planning and management and in the development of resilience and adaptation strategies. PROGEP stakeholders benefited from an extensive training program and were also able to learn about enriching international experiences through study tours organized to Singapore, Malaysia and Brazil. Furthermore, they benefitted from significant logistical support in the form of computer equipment and software necessary for the execution of their mandate.

Local authorities equipped with action plans to mobilize funding

The existence of strategic plans and action plans developed on the basis of the studies described above, may facilitate concerted action between the government and its donor partners. The documents allow local authorities to better target funding aimed at implementing the sustainable structural measures that have been identified.





THE STORMWATER DRAINAGE MASTER PLAN, AN ESSENTIAL STRATEGIC DOCUMENT TO GUIDE EFFECTIVE ACTION IN THE FIGHT AGAINST FLOODING

The Stormwater Drainage Masterplan for the peri-urban Dakar region

The Stormwater Drainage Masterplan for the peri-urban Dakar region was drafted in 2012, prior to the implementation of PROGEP. It aimed to lay the foundations for the planning of structural works to limit flooding over a surface area of 108 km². The document was drafted by a consortium of international firms supervised by ADM and working together with the relevant national directorates and public institutions. The Plan was approved by all stakeholders in the sector.

The Drainage Plan is an essential document for guiding decision-making aimed at the long-term elimination of the recurring floods that afflict the zone. It includes a map of zones that should be kept free of all occupation in order to ensure correct functioning of proposed drainage infrastructure. The plan complements the Urban Masterplan, which had some shortcomings, in particular,

regarding the availability of land reserves and appropriate development solutions.

The Drainage Plan is based on principles that present a shift from earlier conceptions, particularly with regards to: (i) gravity drainage which involves taking advantage of the topography to facilitate stormwater drainage without need for pumping equipment; (ii) adapting the sizing of infrastructure to a context of dense and unplanned urbanization, while limiting the financial and social costs inherent in displacing residents; (iii) integration in the highly-sensitive environment of Niayes, with the establishment of landscape and recreational areas.

The strategic study highlighted the innovative nature of the program and the political will of Senegalese national and local authorities to undertake developments to put in place appropriate



The backbone structure of the masterplan corresponds to the former hydrographic network which had disappeared following the reduction in rainfall and the occupation of right-of-ways by irregular habitat.

2 See the Capitalization Brief “Eliminating flooding in a sustained manner through innovative drainage systems”



OPERATIONALIZE A SUSTAINABLE VISION OF TERRITORY



The Detailed Urban Plan for Pikine and Guediawaye

As part of the implementation of non-infrastructure measures, PROGEP funded the drafting of a Detailed Urban Plan for Pikine and Guediawaye, coordinated by the General Directorate for Urban Planning and Architecture. The Detailed Plan is a framework document of urban planning for effective implementation of controlled land use. The process for the issuance of the decree of approval of the Pikine and Guediawaye Detailed Plan is ongoing.

The Detailed Plan was designed taking into account the general provisions contained in the Urban Masterplan for Dakar and its surroundings for 2035, the PDU. It incorporates the conclusions from the Stormwater Drainage Masterplan, preserving dedicated spaces for the storage of stormwater or for drainage infrastructure.

The Detailed Plan will provide the two towns with a planning document that can be enforced against third-parties and that can guide and streamline interventions by the central state, local authorities and private sector in fighting against recurrent flooding. It has enabled the two towns to develop short-term and long-term visions in order to (i) preserve no-construction zones from uncontrolled occupation to ensure natural drainage and storage of run-off water; (ii) take into account climate-change related risks by establishing new and stricter land use standards; (iii) designate definitive and appropriate vocations for zones identified by the detailed plan as flood-prone and forbidden for construction; (iv) ensure the legal security of the necessary right-of-ways for the development of drainage infrastructure contained in the Drainage Plan.

The Pikine and Guediawaye Detailed Plan lays the foundations for urban development that is respectful of the environment. It places emphasis on the creation of blue-green infrastructure, a well-planned living environment and green spaces to render urban spaces more attractive while encouraging development that breaks with past models which failed to nurture sustainable cities for future generations.

Abdoulaye DIOUF

Director for Sustainable Urban Development, Urban Planning and Regulation at the DGUA



The DGUA ensured the technical leadership of the drafting process of urban planning documents under the PROGEP project.

The Detailed Urban Plan for Pikine and Guediawaye, which was developed with the support of the project, was drafted in an innovative manner. The methodology in particular involved the integration of sustainability aspects and of effects of climate change. The Detailed Plan incorporates aspects of the Drainage Plan and also takes into account the guidelines from the Urban Masterplan for Dakar and its surroundings. Another key aspect was the participatory and inclusive approach that was prioritized in the drafting process. All stakeholders concerned by the Detailed Plan, including local communities, were involved throughout the drafting process.

Today, only 7% of communes have urban plans. The knowledge and tools developed under the PROGEP project will help guide strategic urban planning in the rest of the country.”



PROGEP paid particular attention to strengthening capacities of stakeholders. The photo shows technical staff of Senegalese agencies responsible for urban planning, during a training session on integrated urban governance.



A TRAINING PROGRAM TAILORED TO THE CAPACITY-BUILDING NEEDS OF NATIONAL AND LOCAL INSTITUTIONS

A training program for PROGEP stakeholders was designed and implemented by ADM. The aim was to improve urban governance for stormwater management and flood-risk management, and ensure better control, monitoring and application of laws, regulations and standards for construction.

The seven training sessions that have already been dispensed, between 2016 and 2019, covered the following modules:

1. Stormwater management and climate-change adaptation
2. Urban resilience and climate-change adaptation
3. Integrated urban governance
4. Urban management, regulation, norms and standards
5. Steering and managing City Resilience Programs

6. Forecasting for urban management and climate-change adaptation
7. Integrating the climate emergency and Sustainable Development Goals in development projects and policies

An eighth training module is planned for 2020, under funding from the Nordic Development Fund, to capitalize the formative process that has taken place and make available the knowledge produced to interested Senegalese technical staff working in the field.

Trainings were dispensed to three categories of stakeholders: (i) national PROGEP stakeholder institutions, (ii) elected officials, municipal staff and stakeholders from the districts covered (the towns of Pikine and Guediawaye), and (iii) ADM staff. As of October 2019, 400 people (15% women) had received training.

LESSONS LEARNT

Building a common vision is a prerequisite to foster uptake and ownership of strategic plans

The uptake of the strategic urban planning and management documents presented earlier requires significant efforts in consultation and dialogue, built on a participatory and inclusive approach, to ensure future ownership. All stakeholders in the process must maintain regular dialogue in order to build consensus around the key issues to address. Without such an approach, these documents will be hindered by lack of ownership and difficulties in their approval and implementation processes.

A participatory approach requires greater means

A participatory approach enables a shared vision of challenges and key issues and better ownership of strategic documents. However, this approach requires greater financial, material and human resources to be fully implemented and bring true added value. The planning of activities must, therefore, take into account these requirements.

Respect of the guidelines contained in the urban planning and management documents is essential for reducing flood risk

The work undertaken by PROGEP aimed at resolving land use and local development problems. The experience has shown that intervening a posteriori to resolve these kinds of structural problems has very high social, environmental and financial costs. The need to avoid the same kind of mistakes in the future is clear. Urban planning integrating climate risks and respectful of such risks are essential for building sustainable local regions.



Mame Sokhena NDIOUCK

Coordinator of the Sustainable Development Unit at the Directorate for the Environment and Classified Facilities.



The Directorate for the Environment and Classified Facilities was involved in the PROGEP project as a policy and operations focal point for the Global Environmental Fund (GEF). It supervised the environmental assessment procedure of the project and provided support to all project activities. The training sessions, study tours, logistical support and continuous collaboration during project implementation strengthened our Directorate in the execution of its mandate.

Incorporating climate risks in urban planning documents has enabled the inclusion of a key issue, that of the sustainable development of our regions. The activities undertaken by PROGEP have helped strengthen a national dynamic towards the achievement of the Sustainable Development Goals (SDGs) as part of the fight against climate change, of efforts to establish resilient cities and communities, and to improve access to drinking water and sanitation. This essential contribution to improving the living conditions of our communities deserves to be quantified and recognized.”



BUILDING A NATIONAL VISION FOR INTEGRATED URBAN MANAGEMENT

Through the National Strategy for Integrated Urban Planning and Management, incorporating flood-risk prevention and climate-change adaptation

This strategy was designed in concertation with the General Directorate for Urban Planning and Architecture (DGUA). The final document was approved in 2017 by the National Commission on Urban Planning, Habitat and Living Environment in Senegal.

The strategy was designed using a hierarchical structure, starting from a general framework for a vision to arrive at an operational level with projects divided under four components and 16 sub-components. The interventions can be translated into projects to be implemented in pilot sites (towns, neighborhoods, catchment areas, portions of the coastline), into cross-cutting actions requiring the participation of several government institutions or agencies, or into structural reforms regarding the entire administrative apparatus of the state, etc.

The diagnostic study that was carried out before the strategy was drafted allowed for the identification of several key issues, such as the absolute necessity for planned urban development resilient to the unpredictability caused by climate change, the need for sustainable planning, the incorporation of a long-term vision, the multi-sectoral management of local regions and the need to take immediate action on informal unplanned urban development and habitat in order to increase resilience.

The vision of the Strategy is to “Produce a built living environment that is resilient and sustainable, anchored in the diversity of local regions, with planning based on the reform of urban practices, the inclusion of users, the preventive and corrective reduction of vulnerabilities, in line with the planned development needs of the country³.”

3 Extract from the National Strategy for Integrated Urban Planning and Management, incorporating flood-risk prevention and climate change adaptation (in French).



■ FUTURE PROSPECTS

Implementing the action plans

The existence of participatory climate-risk sensitive planning documents is not sufficient to resolve the problem of flooding. Addressing flooding effectively also requires strong will from the relevant institutions, to take ownership of the planning documents and implement their accompanying action plans in concertation with local communities. The decree of approval of the Pikine and Guediawaye Detailed Plan is currently under examination. Finalizing the procedure for issuing the decree is an indispensable step in finalizing the overall process that has been launched to build local regions that are resilient to climate shocks.

Scale up the initiative to cover all of Senegal

Senegal clearly has a lot to catch up in urban planning. Only 7% of districts have at their disposal detailed and up-to-date strategic documents. The pilot experience carried out under the PROGEP project has allowed for in-depth knowledge of technical and financial resources needed to develop participatory and climate-risk sensitive urban development plans. The National Strat-

egy for Climate-risk Sensitive Urban Planning and Management helps provide necessary guidelines for the replication of PROGEP initiatives at a national level.

Update strategic urban planning and management documents

Strategic urban planning and management documents cannot remain applicable indefinitely. The Stormwater Drainage Masterplan for the peri-urban Dakar region, for example, was drafted in 2012. Realities on the ground have changed since its drafting. Updating the plan is indispensable if it is to remain an effective instrument for decision-making.

Incorporate knowledge produced in a national shared mechanism

The information produced under PROGEP will feed databases of various local regions at the national level. The data and maps produced will be incorporated into national databases set up by agencies responsible for urban planning. They will thus be accessible to all sector stakeholders.



To facilitate uptake of strategic urban planning and management documents, PROGEP took a participatory and inclusive approach. Information signs on the Stormwater Drainage Masterplan for the Dakar peri-urban region, displayed in front of the Dalifort-Foirail retention pond.



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Stormwater Management and Climate Change Adaptation Project (PROGEP)

The Stormwater Management and Climate Change Adaptation Project, PROGEP, implemented by the Municipal Development Agency (ADM), is a component of the Ten-year Flood Control Plan (PDLI). It is funded by the Government of Senegal, with technical and financial support from the World Bank, the Global Environment Fund (GEF) and the Nordic Development Fund for a total of USD 121.3 million (FCFA 60.65 billion).

This urban development project implemented over seven years (2012-2019) was aimed at reducing flood risks in Dakar’s peri-urban area (Pikine and Guediawaye) and at promoting sustainable city management practices in selected urban areas (Saint-Louis and Diamniadio). It sought to find sustainable solutions using an integrated approach based on a combination of infrastructural and non-infrastructural interventions.

The Municipal Development Agency (ADM)

ADM, the agency responsible for coordinating the implementation of the Stormwater Management and Climate Change Adaptation Project (PROGEP), was established in 1997 thanks to combined efforts of the Government and the Mayors Association of Senegal, AMS. The agency was established in the context of 1996 reforms, referred to as the “regionalization” reforms, aimed at reinforcing decentralization and local development in Senegal. As a key partner to local

authorities, and in accordance with its Strategic Plan, ADM works to make local regions more attractive and competitive and to strengthen their governance. To this end, the agency contributes to building strategic, financial, administrative and technical capacities of local authorities. ADM helps authorities manage territorial information, facilitates cooperation between local authorities, and promotes inter-communality.

This publication is part of a series of briefs that capitalize the achievements of and lessons learned from the implementation of the PROGEP project. This capitalization brief, as well as the publications cited, can be accessed at: www.adm.sn/progep