

City Water Stories:

Dakar



Population

▪ Dakar Metropolitan area is a peninsula that houses 3 429 370 people, with an extreme urban density of 6,235 people per km² in the City. Growth rate: 2.5%/year. Urbanisation rate is of 96.5%.

Geography

▪ Area: 550 km².
▪ The region is bordered to the north, west and south by the Atlantic Ocean and to the east by the Thiès region, a position that offers very little space for expanding the urban boundary.

Main challenges

▪ Rapid urbanization combined with a lack of planning translate into lagging public services & facilities, frequent water shortages and energy disruptions, exacerbated by the risks of coastal flooding, earthquakes, and sea level rise.

Main solution

▪ Improving infrastructure to provide safe drinking water and implementing sanitation for all including the treatment of faecal sludge and wastewater, while providing new business opportunities and community engagement.

Challenges for this Growing City

Changing demographics in Dakar are an outcome of persistent droughts in the countryside, driving rural-urban migration in hopes of better livelihoods. This massive urban expansion causes overpopulation and construction in unpermitted areas, creating slums lacking proper drainage, sewage systems or urban planning. The urban surface area in Dakar increased by 25% between 1998 and 2008, encroaching on wetland areas, woodlands and farmland, consequently reducing permeability.

The informal settlements and the city as a whole are facing issues with water quality and supply management, as well as sanitation. The influx of inhabitants and the impacts of a changing climate are major challenges. Droughts and floods are on the rise, with the catastrophic floods in 2012 resulting in major loss of life, and a decline in public and private infrastructure services in the city and its suburbs.

Sea level rise is also challenging Dakar's urban resilience. The peninsula could face a 1m sea-level rise by 2050. Salinization of aquifers is already occurring due to the overexploitation of water tables to meet the competing and growing demands for freshwater and sea-level rise will exacerbate this situation. In addition, freshwater reserves are contaminated with other pollutants such as nitrates, lead, cadmium, aluminium, and solid waste.

Ensuring Quality Water Supply

Despite these many issues, Dakar remains the economic, political and administrative capital of Senegal, and strives to integrate all dimensions of urban life. Through public outreach, strategic plans, and innovative infrastructure, the city of Dakar is leading the way in water management in West Africa.

The 2012 floods were of significant importance in catalysing a turning point in Senegal's flood risk management, as the government adopted the Decennial Flood Management Program. The Storm Water Management and Climate Change Adaptation Project (otherwise known as PROGEP) started in December 2013, is investing in necessary infrastructure and also working on institutional capacities, urban planning, wetland management, community engagement in flood risk reduction, waste management and climate change adaptation. Working across sectors, PROGEP contributes to build the resilience that is needed for Dakar's urban areas.

SONES in charge of drinking water and ONAS in charge of sanitation are great institutional assets for Dakar. They offer the coordination between levels of governments and sectors to address the expansion of the water services and innovative approaches for sanitation and sludge management. By 2020, SONES is targeting to secure freshwater resources for 500 000 people and include resource recovery processes to protect groundwater levels from overexploitation.

Case Study: Janicki Omniprocessor, improving sanitation for all in an affordable way

The omniprocessor is an alternative to traditional sewerage management, yielding by-products from faecal sludge, including electricity, clean water, and ash that can be used as fertilizer for agriculture or in the manufacturing of breeze blocks for construction. The pilot project in Dakar, supported by the Gates Foundation successfully developed a public private partnership between ONAS and local businesses to establish a privately owned truck fleet to collect faecal sludge for its processing in the Janicki Omniprocessor. The program covers approximately 120,000 households in suburban areas of Pikine – Guediawaye, 52% of whom currently use manual emptying. The next step is upscaling beyond these 2 neighborhoods.



Dakar's Journey to Become a Water-Wise City

A closer look at how Dakar is satisfying the IWA Principles for Water-Wise Cities

1 Regenerative Water Services

Replenish Waterbodies & their Ecosystems

- ✓ SONES working on overexploitation and water quality. PROGEP.

Reduce the Amount of Water & Energy Used

- ✓ Awareness programme on reducing use.

Reuse, Recover, Recycle

- ✓ SONES examples – diversifying the sources: new drilling projects & planned desalination plants.
- ✓ ONAS Janicki Omniprocessor to treat and upcycle faecal sludge.
- ✓ ONAS reuse programme.

Apply a Systemic Approach for Integration with Other Urban Services

- ✓ ONAS Janicki Omniprocessor.

Increase the Modularity of Systems and Ensure Multiple Options

- ✓ New plants, more pipelines, extensive sanitation programs.

2 Water Sensitive Urban Design

Enable Regenerative Water Services

- ✓ 2008 Urbanism Codes and Regulations supporting recycling and lower use of water.

Design Urban Spaces to Reduce Flood Risks

- ✓ PROGEP project to develop urban resilience to flooding.

Enhance Liveability with Visible Water

Modify & Adapt Urban Materials to Minimise Environmental Impact

3 Basin Connected Cities

Plan to Secure Water Resources & Mitigate Drought

- ✓ Desalination project planned to reduce pressure of groundwater resources.

Protect the Quality of Water Resources

- ✓ 3 operating sewage treatment plants.
- ✓ Improvements to faecal sludge management (Janicki Omniprocessor).

Prepare for Extreme Events

- ✓ Senegalese authorities creating maps for flood risks in two suburbs.

4 Water-Wise Communities

Empowered Citizens

- ✓ PROGEP.
- ✓ Urban agriculture project.

Professionals Aware of Water Co-Benefits

- ✓ Mainly in the water companies (SONES-Assets holding, SDE-Private operator).

Transdisciplinary Planning Teams

PROGEP.

Policy Makers Enabling Water-Wise Action

- ✓ Ministry of Hydraulics and Sanitation.

Leaders that Engage and Engender Trust

5 Building Blocks for Dakar on the journey to water-wise cities



Vision

Strives to be a centre that integrates all dimensions of urban life.



Governance

Clear water governance with ONAS and SONES.
Plan Senegal Emergent (PSE).



Knowledge & Capacity

Mainly in water and sanitation companies.



Planning Tools

Government of Senegal's 2010 Action Plan.



Implementation Tools

Water and sanitation companies.