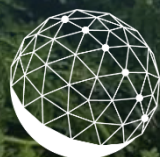


PROJECT EXEMPLAR

N'Djamena Urban Resilience Project



GLOBAL
CENTER ON
ADAPTATION

KEY PROJECT INFORMATION

Country / Region

Chad

Sector

Urban

Investment Value

US \$200M

Implementation Period

2023-2028

Key Partners

World Bank

Beneficiaries

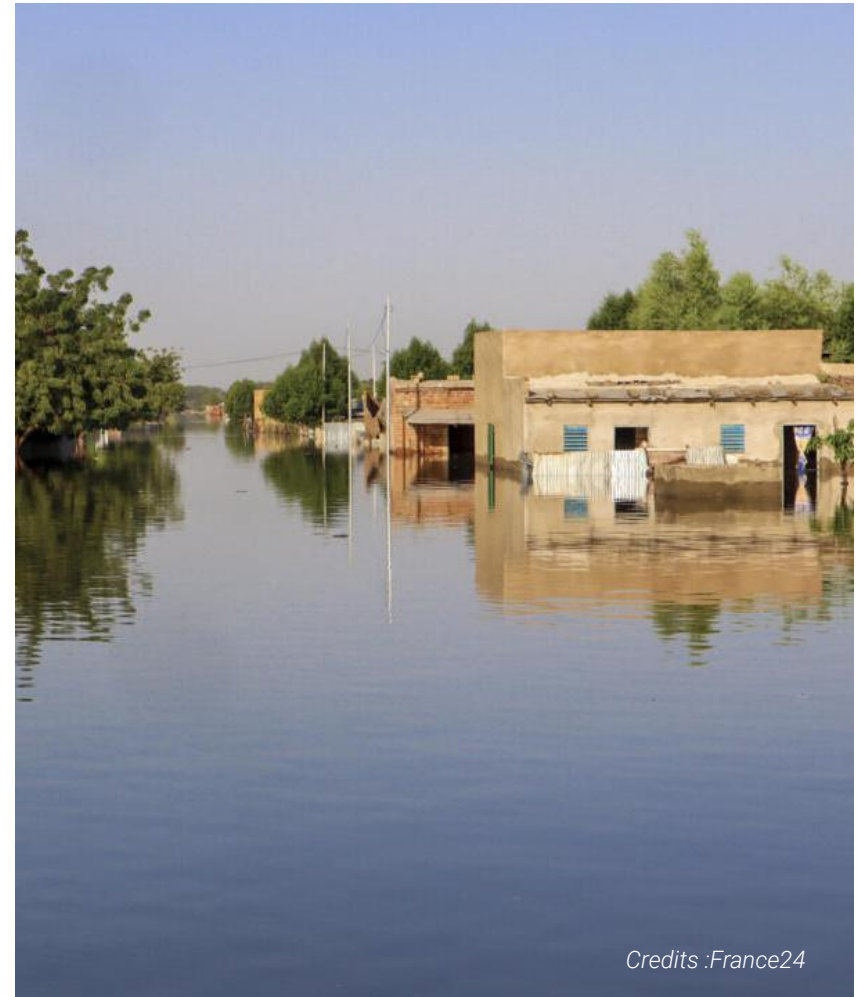
600,000 people

THE ADAPTATION STORY

Background and need

The Global Center on Adaptation (GCA) supported the World Bank in the preparation and implementation of the N'Djamena Urban Resilience Project, with the goal of reducing flood risk and strengthening climate resilient urban planning and selected flood-related services in N'Djamena.

Our technical assistance helped shape the World Bank's early planning stages for investments related to flood protection and drainage infrastructure. In 2024, major flooding throughout the country affected 1.94M people and damaged or destroyed key infrastructure. Climate change will increase the likelihood and magnitude of rainfall and riverine flooding. High rates of poverty -- in 2022, the poverty rate in Chad was 44.8% -- and a lack of basic services, including deficient sanitation and solid waste management, contributes to the vulnerability of households. A rapidly growing urban population, combined with limited awareness and education around climate impacts, compound social insecurity and increase risk from flooding. Gender-based vulnerability is particularly acute: Chad ranks 150th out of 162 countries in UNDP's Gender Inequality Index. Consequently, a gender-based focus is especially important in informing future investments, and was a key part of GCA's support.



What was GCA's Role?

GCA carried out a gender vulnerability assessment that informed a project-adapted Gender Action Plan and developed a Terms of Reference document to support the implementation of the community investment component of US\$30 million. GCA then supported the prioritization and pre-feasibility assessment of investments at the urban sub-catchment scale. The pre-feasibility assessment identified investments that will reduce flood impacts, with a focus on socially vulnerable populations in N'Djamena, and an emphasis on Nature-Based Solutions (NBS) to complement large-scale infrastructure interventions.

GCA support was instrumental for the project to obtain a gender tag. The World Bank Project Appraisal Document (PAD) identifies gender gaps, describes concrete actions to narrow them, and lays out indicators to measure progress. Specifically, GCA helped guide a US\$30m community investment component focusing on community co-benefits, to ensure inclusivity and equity in distribution of resilience benefits. The prioritization of climate resilient and gender-sensitive investments will guide an urban masterplan and will inform the choice of medium to long-term investments for the Government, World Bank and other financiers. Our primary implementing partner for this project was Groupe Huit.

Results and Impact

GCA introduced a climate and gender focus into this project, which was not present before our engagement. We also refocused the project from large-scale grey infrastructure to a mixed green-grey approach that emphasizes the importance of Nature-Based Solutions as a viable method for reducing flood risk in N'Djamena. Key deliverables included a Gender Vulnerability Study that informed the World Bank investment package, and a shortlist of potential solutions identified at the pre-feasibility stage, that emphasize a mix of 'green' and 'grey' adaptation measures. When implemented, the investment project will radically change N'Djamena, significantly reducing risk to flooding and introducing NBS at a large-scale for the first time in Chad.

Climate hazards, impacts and prioritized adaptation measures

KEY CLIMATE HAZARDS	IMPACTS ON INFRASTRUCTURE, SERVICES AND USERS	PRIORITISED ADAPTATION MEASURES
Pluvial flooding	Infrastructure: Heavy rainfall causes water stagnation that severely damages road foundations and earthen levees. Lack of drainage in outlying neighborhoods means water cannot be channeled, leading to rapid dilapidation of existing utility networks. Services: Floods disrupt urban transit and critical corridors, severing supply chains for food and water from Cameroon. Stagnation also hampers electricity, sanitation, and waste collection services for extended periods. Users: Floods cause displacement and disease for millions, particularly in unplanned areas like Lamadji and Mabrouka. Women and children are most vulnerable as they face higher risks of waterborne diseases and loss of security when their homes in low-lying floodplains near the Chari and Logone rivers are flooded.	Selected measures for further investigation in the feasibility assessment include: • Offline Flood Storage: Development of three large reservoirs to the north and east of the city. • Structural Reinforcement: Construction of protective dikes around basins, villages, and agricultural fields. • River Renaturation: Dredging the El Biher riverbed and establishing green corridors and public spaces. • Nature-Based Solutions: Implementation of an urban park and vegetated irrigation canals. • Non-Structural Measures: Development of flood early warning systems (EWS) and improved evacuation routes.

KEY LESSONS

What we have learnt

GCA established and maintained a close working relationship with the World Bank over two years, which meant we could respond quickly to the changing needs of the World Bank, who kept us informed of ongoing conversations with stakeholders with Chadian government stakeholders. The Bank has an on-the-ground presence in N'Djamena and excellent understanding of government priorities. By keeping regular contact with the World Bank team throughout the project, we were able to ensure that our inputs could feed directly into the Bank's project development process. GCA focused our study on a long-list of potential interventions that would have real political traction with the relevant ministry, and are ultimately more likely to be implemented.

Replicability

While the technical modeling was site-specific, the methodology—integrating rigorous engineering with early-stage gender-sensitive social assessments—serves as a blueprint for future World Bank projects in Chad. By institutionalizing this gender-focused approach, Chadian ministries can effectively mainstream climate-resilient investment planning into national adaptation strategies.

Actionable insights for MDBs

THEME	PRIORITISED ADAPTATION MEASURES
Embedding a gender approach into the project scoping and early planning	MDBs should integrate gender considerations into initial planning documents, such as Project Appraisal Documents (PADs), alongside technical engineering analysis. This commitment ensures a Gender Equality and Social Inclusion (GESI) focus is embedded from the outset, significantly strengthening the likelihood that flood risk measures succeed as intended. Proactive gender integration also improves long-term sustainability and the effectiveness of future maintenance by accounting for the specific roles and needs of all community members.
Including Nature-Based Solutions and green-grey measures for flood risk reduction	To manage riverine flooding, MDBs can develop "design-ready" knowledge products like NbS Compendiums that promote mixed green-grey solutions. These hybrid interventions—such as reinforced dikes combined with river renaturation and vegetated storage basins—should be tailored to specific river features, land availability, and community needs. This approach provides multiple co-benefits beyond flood reduction, including improved biodiversity and public spaces, while ensuring nature-based interventions are technically sound and accessible for municipal investment pipelines.

