

# Climate-adaptive planning for Angola's coastal cities

A. Cain, J. Tiago and J. Domingos

February 2015



© O Pais

## What is the issue?

In the coastal cities of Angola, the intensity and variability of climatic events such as rainstorms and floods have more than doubled over the last 60 years. For much of that period, conflict in the interior provinces was driving people to the relative safety of coastal cities – namely Cabinda, Luanda and the twin cities of Benguela/Lobito – where most settled in marginal and environmentally fragile land at the urban periphery. The growth of these settlements has resulted in the occupation of high risk, low cost land in river basins and swampy coastal locations. Cholera, malaria and other diseases are increasingly serious problems, linked to a lack of safe water and adequate sanitation. Increasing climate variability has compounded those problems, with rainfall tending to come in intense storms, causing flooding. Following floods in 2006, Luanda suffered a cholera epidemic with 35,000 cases reported.

Meteorological data is critical for assessing the potential and likely impact of climatic hazards. However, 30 years of civil war destroyed meteorological and hydrological facilities in Angola: in 1974 there were 500 weather stations, but at the end of the war in 2002, only 7 remained operational (less than 2%). As a result, there is a critical lack of climate data in the country. In response the *Water Resource Management under Changing Climate in Angola's Coastal Settlements* project, funded by the International Development Research Centre (IDRC), is filling climate data gaps and undertaking vulnerability assessments. By mapping areas and populations at risk, the project is providing evidence and information

## Key messages

- Angola's civil war resulted in the migration of populations into environmentally risky coastal areas that are most vulnerable to climate change.
- 5-10% of coastal populations live in areas where their homes are in danger due to flooding and erosion.
- 37% of urban homes are in areas where environmental diseases such as malaria, diarrhea and cholera are endemic.
- Almost 50% of families living in coastal cities do not have piped water in their homes.
- Databases and maps of populations at risk produced by the research project provide urban planners with information they need to respond and for regulating city growth.
- Adapting urban municipal plans to the impacts of climate variability and change depends on evidence generated through participatory research.
- As the negative effects of climate variability and change on coastal cities become more and more evident, the demand from planners and policymakers for risk mapping has grown significantly.

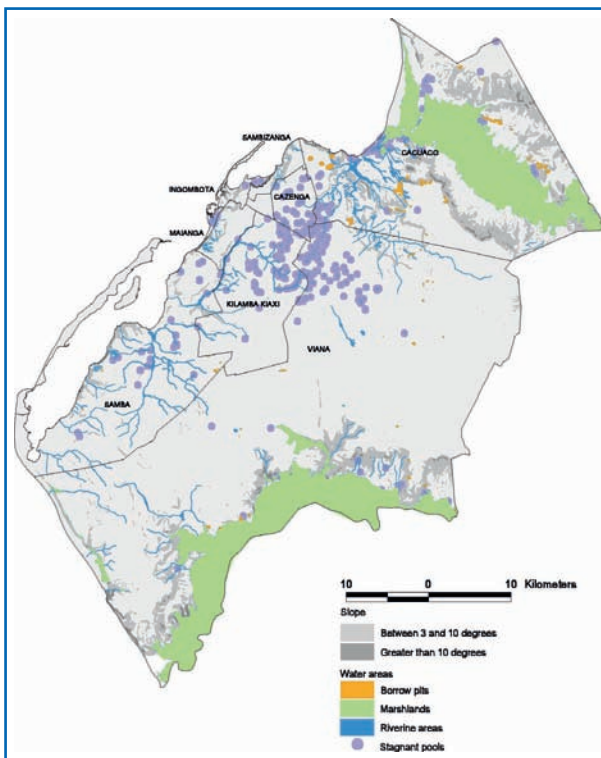
needed by planners and local governments in developing municipal plans and upgrading social infrastructure.

## What did we do?

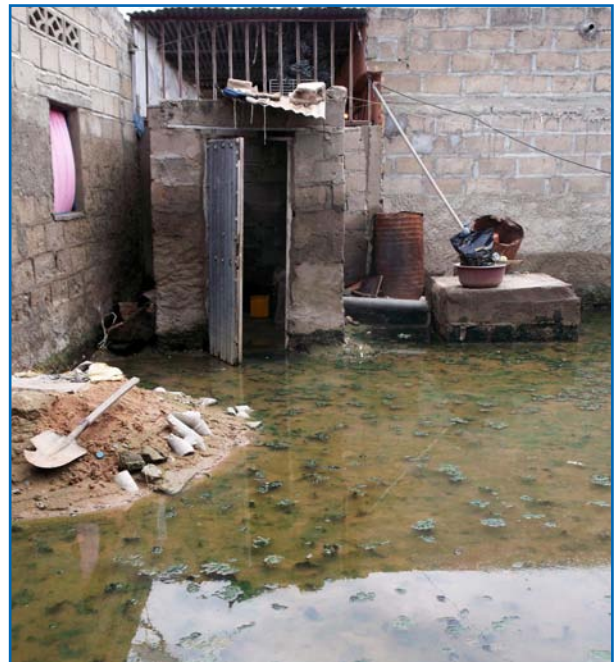
Because of the 30-year climate information-gap, the project explored alternative resources for reconstructing the lost data, including historical meteorological records, media and newspaper archives and the memories of community elders. Earlier IDRC-supported research on water markets provided important background information, such as the value of the informal water economy, which surpassed US\$250 million annually.

The project used participatory research methods and satellite imagery to map areas and communities at risk. Remote sensing tools were combined with on-the-ground household surveys and focus group discussions to validate the data. Five thousand interviews were conducted in the coastal cities of Cabinda (1500), Luanda (2500) and the twin cities of Benguela/Lobito (1000).

Municipal administrations and the Urban Poverty Network (a civil society organization) are key stakeholders and participated in the field work. Angola's Ministry of Environment and the National Institute of Water Resources



**Figure 1: Environmental risk map of Luanda showing areas and populations vulnerable to the effects of climate variability and change, such as flooding, erosion and ground water contamination**



**Lack of safe water and sanitation are driving diseases such as cholera**

are joint project partners and owners of the data. The project produces mapped information in a form usable by urban planners. Data and findings are being prepared for sharing in the public domain with academics and researchers to feed their work on climate and environmental issues in Angola (at [www.dwangola.angonet.org](http://www.dwangola.angonet.org)).

## What did we learn?

- In Angolan coastal cities, 5-10% of the population live in high risk flood and erosion zones.
- 40% to 50% of the population in the coastal area is living without adequate access to water.
- Cases of malaria, diarrhea and cholera are frequent in those same coastal areas, where water is scarce and usually polluted, and environmental sanitation is poor.
- Oral histories from victims of flooding and sea-level rise provide useful lessons on the aftermath and impact on family livelihoods (see Senor Chico's story). Poverty among these communities reduces their capacity to recover from increasingly severe climatic incidences.





**Participatory methods developed by the project contributed to better management of public water access points**

*"The rain started at midnight on that day in February 2007. We had no time to remove our things, the rain was so strong that it soon flooded our house, we were lucky to get out... the house was swept away. We got some relief from the government such as water and food for three months...but today, six years later, we are in much the same situation, living in a temporary emergency shelter and unable to go back and even rebuild... We are waiting for the government to provide us with help for building a new house but this will be somewhere near the edge of the city..."*

**Senor Chico, Cacuo**

## Stories of change

In three municipalities of Luanda, participatory methods developed by the project have contributed to improved water governance, resulting in significant changes in the management of public water points, widening access to clean water and reducing water costs by 90% (from US\$0.50 to \$0.05 per bucket). The Angolan government has replicated the community management model across the country, ensuring that ongoing maintenance is financed by locally elected committees who collect fees for services and promote hygiene and basic sanitation.

Risk maps produced by the project are increasingly used by municipal planners. A basis for participatory consultation has been laid, with the help of data collected through the work of local civil society organisations. The provision of validated data in an easily understood, mapped form provides a good basis for dialogue on how settlements can

be adapted to meet climatic risks, without resorting to the wholesale removal and demolition of existing communities.

Community-based actions include the removal of rubbish and regular maintenance of drainage channels and the greening of the banks of intermittent water-courses to prevent flash flooding. Risk maps help city planners in preventing the expansion of coastal cities into environmentally risky areas, and also help identify where remedial actions are necessary in the existing settlements.

## What are the policy implications?

In the post-war period, public demands for safe and healthy cities and affordable water and sanitation services are increasingly voiced. In this context, the Angolan government is attempting to meet the challenges of overpopulated, unstructured and unhealthy cities by implementing an ambitious program of regional and urban planning. However, planning for poverty reduction and environmental adaptation requires real data. Budgeting for water and sanitation infrastructure, for example, is most adapted to real needs when planned with community participation, especially in the initial collection of data and validation of results. The research findings hence provide essential information, particularly in the coastal region where most Angolans live.



**Improved water governance has led to a 90% decrease in water prices**

For urban planners, local authorities (provincial and municipal level), and the Ministry of the Environment, the following actions should be a priority:

- Extend current water programs to coastal city populations to prevent diseases;
- Develop rapid-response plans in the high risk areas to help mitigate the worst effects of environmental disasters; and
- Promote land use planning and broad public consultation to ensure community buy-in to these plans.

## What next?

The area of action should be scaled up to include all of the major coastal areas. The use of analytical risk mapping models and participatory mapping research methodologies should be promoted through academic and research institutions.

Risks from climate change and variability in other Angolan coastal cities, such as Namibe, Soyo and the southern province of Cunene, should be investigated.

Urban adaptation strategies need to be further developed using the findings from the current research. They can influence government policy options in the following ways:

- **Resettlement**, either post or pre-disaster, involves removing families from high risk areas by either enticement or compulsion. This has been common in Angola in the past but sometimes executed in ways that

violate residents' socio-economic rights. Participatory resettlement approaches need to be developed.

- **Urban requalification** (renewal) implies temporary dislocation of families from risk areas to allow site and infrastructure improvements to be made before allowing them to reoccupy the same site or neighbourhood. Land readjustment policies must ensure that the benefits, including increased land values, are shared by all, including residents, government and private developers.
- **Urban upgrading** is a participatory process that involves communities in adaptation through a combination of external resources and their own.
- **Participatory municipal planning** approaches need to be researched and tested for the community to contribute to the adaptation process and explore other alternatives for dealing with climate change variability.

## Need more information?

Allan Cain  
Director  
Development Workshop, Angola  
[allan.cain@gmail.com](mailto:allan.cain@gmail.com)

Website: <http://www.dw.angonet.org/>



## References

Cain A (2014) *Adaptação às Alterações Climáticas e Gestão de Recursos Hídricos nos Assentamentos Costeiros em Angola*. Development Workshop. <http://bit.ly/1BxsMdw>.

Development Workshop (2012). *Poverty & Environmental Vulnerability in Angola's Growing Slums 2009 – 2012*. Development Workshop. <http://bit.ly/1CMpvc8>.



This brief reports on research supported by the International Development Research Centre's Climate Change and Water program, with funds from the Government of Canada's fast start climate finance: [www.idrc.ca/ccw](http://www.idrc.ca/ccw).  
Produced by WRENmedia in February 2015.