African Climate & Development Initiative

RESEARCH BRIEF | February 2023

Building adaptive governance capacities for a systemic response to extreme climate events at the city scale: Cape Town's experience

Gina Ziervogel and Gareth Morgan

RESEARCH OVERVIEW

Cities, home to the majority of the world's population, are continuing to grow rapidly. Coupled with this growth, cities are experiencing the repercussions of climate change, including droughts, floods, hurricanes, fires and heat waves. Cities have also been dealing with the global COVID-19 pandemic as well as planning for the likelihood of more pandemics and other threats, such as cyberattacks and blackouts. The challenge for city governments is to continue providing for the well-being of their residents while managing multiple events and threats. At the same time they must consider how to adapt to future risks.

From 2015 to 2018 the City of Cape Town (the City) experienced an increasingly severe drought, closely followed by the COVID-19 pandemic in 2020 and 2021. The research considers the City's responses to these two proximate extreme events through a series of interviews and engagements with senior government officials. Both events prompted complex responses from multiple sectors across the metropolitan area. Although the drought was climate-specific and the pandemic was not, the successes and shortcomings of the City's responses provide lessons on how they and other metropolitan governments can better adapt to similar extreme events in the future.

The research highlights the need to establish a systemic approach to managing extreme events across sectors at a city scale. Five inter-related adaptive governance capacities are identified as necessary for building a rapid and effective systemic response that can build resilience to future extreme events and threats. Specifically, it is important that:

1. Local government must be able to **respond to hazards and risk systemically**
2. **System-level data** is available to quantify and develop an integrated understanding of important system components
3. **Flexible governance mechanisms** can support agile leadership at senior city management level
4. City governments must develop the **capacity for project execution skills** that enable the rapid implementation of necessary responses and infrastructure
5. City governments must have the ability to **partner with civil society and the private sector**

KEY FINDINGS

To build cities' resilience to future climate extreme events and multi-hazards it is essential to establish a systemic approach across sectors at city scale.

Five inter-related adaptive governance capacities are identified as key to building a rapid and effective systemic response to future extreme events within city government.

Building long-term planning capacity within disaster management portfolios could support a transition towards sustainability.

Finding a balance between flexibility and stability in a city governance system is a central tension in governing for resilience.

The City of Cape Town's response to two extreme events in five years (a drought and COVID-19) underscored the importance of having capacity to respond to both immediate and future risks.

Full paper:
Ziervogel, G. and Morgan, G. 2022. Building adaptive governance capacities for a systemic response to extreme climate events at the city scale: Cape Town's experience with drought and COVID-19, *Journal of Extreme Events*

Keywords: *Future extreme events; cascading risk (multiple hazards occur simultaneously); adaptive governance; systemic response*

UNPACKING THE RESEARCH

City governments across the world are under prepared for potential disasters and have limited capacity to deal with threats such as extreme climate events or future pandemics. In many instances, government departmental responses are divided up into climate adaptation, disaster risk and other urban functions. The growing possibility of disasters that could impact *all* aspects of city life demands the development of city-wide adaptation and disaster governance capabilities that do not sit solely in environment or disaster departments but span across sectors and scales. Hence there are increasing calls for cities to transform their approach to a more systemic response that can help address disaster risk and reduce urban poverty while also developing urban resilience pathways.

Globally, the COVID-19 pandemic emphasised how interconnected different sectors are in reality, by testing city governments' capacity to cope with the compound risk that arises from the interaction of hazards and cascading issues. It highlighted the recent calls for adaptive governance. The concept of adaptive governance incorporates flexibility and capacity for change in both planning and implementation. The approach encourages a shift away from more linear, hazard-driven approaches towards new planning systems and governance processes that can integrate multiple hazards and support cross-sectoral coordination within cities. Central to this approach is the need for iterative reflection on and response to environmental or social change.

SYSTEMIC RESPONSE

A systemic response is one that moves away from a siloed approach. It acknowledges and integrates different parts of the relevant system rather than addressing issues in isolation.

CASE STUDY: CAPE TOWN

Cape Town's recent experience of dealing with the 2015 to 2018 drought and COVID-19 in 2020 and 2021, is used as an example of how city governments can build adaptive governance capacities for a systemic response to extreme events. The research is based on data from two studies and accompanying interviews that considered the City's responses to the drought and COVID-19.

LESSONS LEARNED

The City's resilience portfolio, established during a long-term drought, provided the leadership team with capacity to build a response that cut across siloes.

The City learned valuable lessons during the drought and was able to employ learnings around how to manage city-wide extreme events to the rapidly-moving COVID-19 situation.

Photo | Cape Town city centre (Milani Mbombo on Unsplash)

CASE STUDY: CAPE TOWN (cont'd)

With regards the drought, a range of interventions were needed and contributed to strengthening the City's ability to adapt. Firstly, water supply needed to be augmented urgently, which demanded quick planning and budgeting, the release of funds and the fast-tracking of tendering processes. In parallel, the City ran a campaign to reduce water demand and developed a Critical Water Shortages Disaster Plan that in the end did not need to be fully implemented.

A new Water Strategy was developed in the wake of the drought with input from different departments. Early in the drought, the City set up a Section 80 Water Resilience Advisory Committee, comprising representatives from academia, business, non-governmental organisations (NGOs), other spheres of government and other municipalities, reflecting the need for broader engagement and partnerships in adapting to complex challenges.

The COVID-19 pandemic that came in 2020 created another complex situation for the City, delivering both a health shock and an economic shock. These system-wide impacts were exacerbated by underlying chronic stressors such as the co-burden of other diseases and high levels of unemployment. Added to this, the pandemic's trajectory was multi-directional, which complicated the planning and response processes.

Two extreme events so close together put pressure on the City's capacity to be resilient, but they also provided an opportunity to study and develop adaptive governance capacities. The City felt better prepared to deal with an event on the scale of COVID-19 having already managed the city through the drought and secured some learning from their experience. Drawing on what was learnt during the Cape Town experience, the research identifies five capacities that can help other cities respond to extreme events in a holistic manner.

Figure 1 | Summary of the adaptive governance capacities built in the City of Cape Town in response to the drought and COVID-19

	City's response:	
Adaptive governance capacity	**City's management of the 2015-2018 drought (2017-18)**	**COVID-19 (2020-21)**
Respond to hazard and risk systemically	Considered drought's city-wide implications and planning responses. Developed scenarios for engagement across departments and directorates.	Developed responses across multiple departments. Used COVID-19 Dynamic Operations Framework weekly to inform decision-making.
Use system-level data	Shared data through Water Outlook buttelin and water dashboard. Developed social vulnerability and economic nodes index.	Used spatially mapped vulnerability viewer to identify risk areas and direct resources. Partnered with provincial government.
Use flexible governance mechanisms	Leadership moved to transversal leadership of Executive Management team spanning multiple portfolios. Senior leadership took enterprise risk management approach.	Covid Crisis Coordinating Team under leadership of Executive Management. Took enterprise risk management approach.
Develop project execution skills	Project execution skills helped increase water supply. Water demand reduced through media campaigns, tariffs and restrictions. Developed Critical Water Shortages Disaster Plan. Prepared for Day Zero.	Scaled up fatality planning with associated trigger points for project execution and expansion. Developed new primary healthcare facilities and expanded existing ones.
Partner with civil society and the private sector	Worked with residents and private sector to drive down water consumption.	Worked with residents to slow spread of virus, with provincial government to manage the response, also with NGOs and neighbourhood watches.

CONSIDERATIONS FOR POLICY, PRACTICE AND RESEARCH

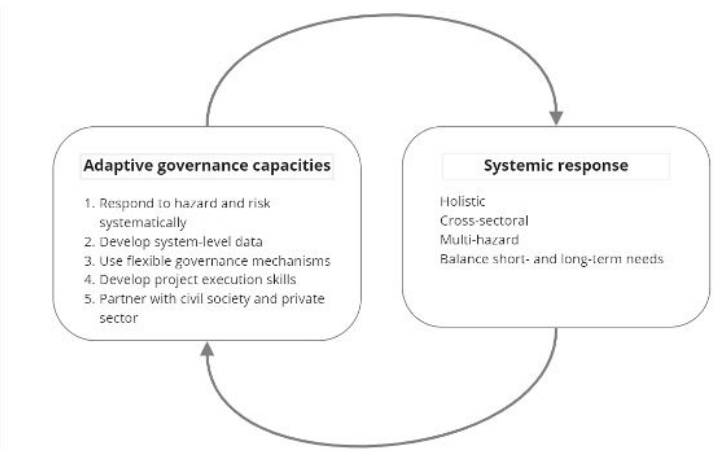

Figure 2 (left) | Five types of adaptive governance capacities that city governments can build to support a more systemic response to extreme events
Figure 3 (right) | A spatial mapping exercise with stakeholders

- Insufficient attention has been paid to preparing for extreme events at city scale, but resilience efforts by city governments are helping to highlight the interrelationship between climate and other stressors and to facilitate an understanding of changing risk.
- Adapting to climate change is increasingly being prioritised by cities, providing an entry point for adaptive governance.
- To address the scale of the challenge, more attention should focus on building adaptive urban governance capacities to support critical interventions that iteratively integrate ecological, social and technical parts of a city system.
- Enabling access to and analysis of any relevant data that can help to inform decisions is important because it allows for agile management of a city system – existing comprehensive data and vulnerability mapping helped the City to respond to recent events as well as to identify gaps in the data that should be addressed in the future.
- The City's response was multi-faceted and centrally coordinated. This approach, enabled by a leadership team that engaged relevant departments, meant strategies were developed to ensure a continuity of services and critical operations across the City, with limited interruptions.
- The City leadership team adopted an ad-hoc pathways approach, where progress was measured and trigger points were identified to signal that a change of direction was needed.
- Central to a systemic response is building relationships with citizens, the private sector and NGOs. Cities, including Cape Town, should continue to work to understand the full range of actors who are able to contribute to a systemic response, and build trust and networks before extreme events occur.

Some of the five adaptive governance capacities suggested in this research contribute directly to a systemic way of responding and planning at a city level. Other capacities contribute more broadly to the ability of city governments to respond to a future event.

FURTHER READING

Birkmann, J., M. Garschagen, and N. Setiadi. 2014. New challenges for adaptive urban governance in highly dynamic environments: Revisiting planning systems and tools for adaptive and strategic planning. *Urban Climate* 7:115–133.

da Silva, J., S. Kernaghan, and A. Luque. 2012. A systems approach to meeting the challenges of urban climate change. *International Journal of Urban Sustainable Development* 4(2):125–145.

Djalante, R., C. Holley, and F. Thomalla. 2011. Adaptive governance and managing resilience to natural hazards. *International Journal of Disaster Risk Science* 2(4):1–14.

Parnell, S. 2020. The enabling conditions of post-pandemic city government. *Environment and Planning B: Urban Analytics and City Science* 47(7):1143–1145.

Pelling, M., W. T. L. Chow, E. Chu, R. Dawson, D. Dodman, A. Fraser, B. Hayward, L. Khirfan, T. McPhearson, A. Prakash, and G. Ziervogel. 2021. A climate resilience research renewal agenda: learning lessons from the COVID-19 pandemic for urban climate resilience. *Climate and Development*:1–8.

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Corresponding author: Gina Ziervogel, gina@csag.uc

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