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CLIMATE INFORMATION BRIEFING NOTE

ENHANCING THE CLIMATE INFORMATION ECOSYSTEM TO BUILD RESILIENT CITIES

We all watch and plan for the weather, but are we paying enough attention to the climate when designing and managing our cities?

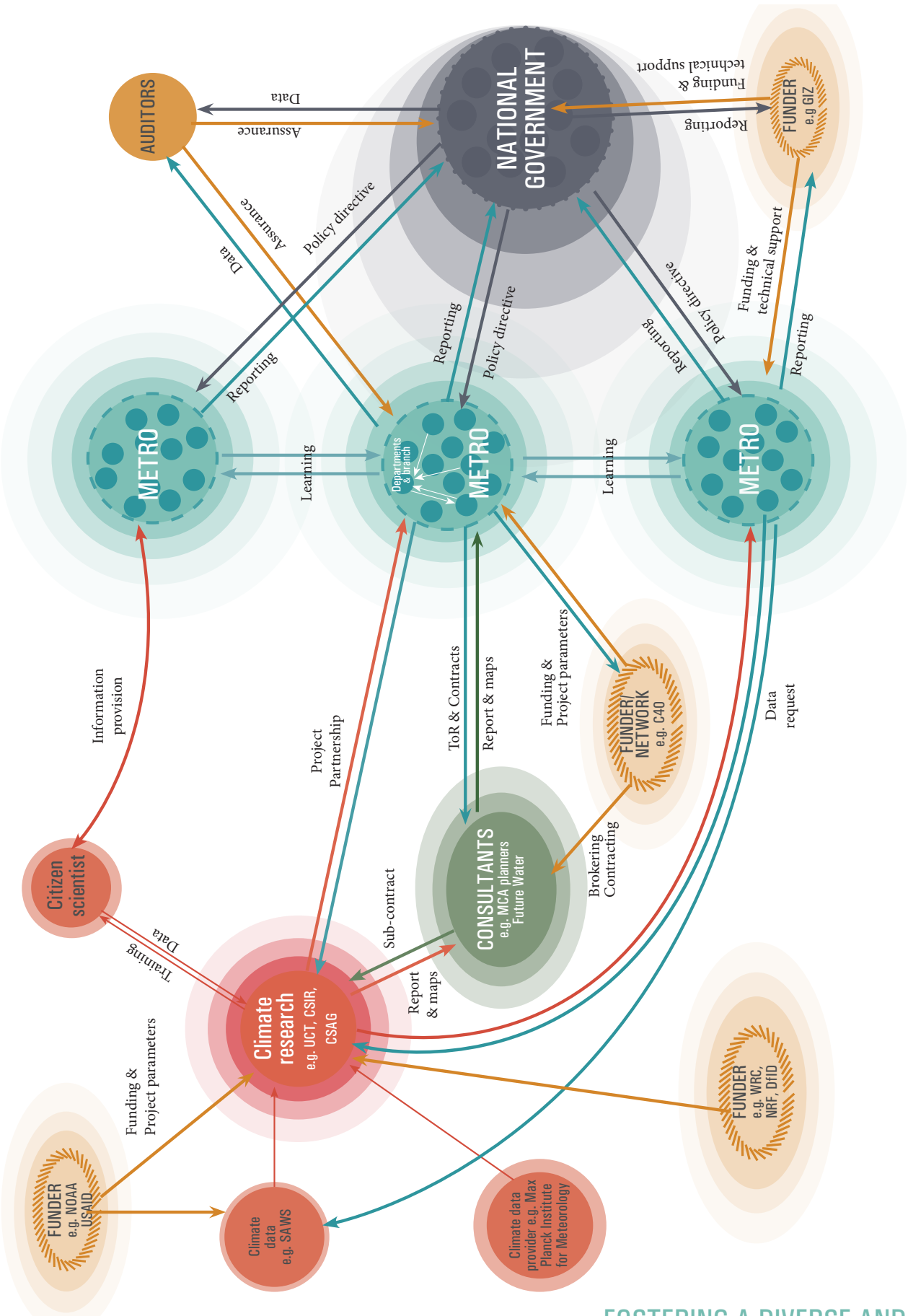
Droughts, flooding, erosion, landslides, heat stress, high winds, storms and disease outbreaks all pose severe risks to our cities. These climate-related risks are growing, requiring widespread action. For cities to develop in ways that are sustainable, climate resilient and equitable, considerations of climate variability and change must factor into planning, investment and management decisions. To do so requires robust, actionable climate information. Yet much of the available climate information is neither robust nor actionable at the city scale. This city-scale information gap is a global challenge, also experienced by cities locally. To address this challenge requires fostering a climate information ecosystem that draws together the resources, expertise and needs of data providers, researchers, consultants, funders, urban residents, municipal and national government entities, to co-produce climate information that is relevant to a variety of complex, and evolving, technical and political urban decisions. There is not a simple information fix. Rather data management, analytical and engagement capabilities and relationships need to be built and sustained. This is one of the key findings from the research, based on published literature and case studies from the City of Cape Town, eThekwini and Mangaung Metropolitan Municipalities, conducted by the African Centre for Cities, for the Cities Support Programme.

WEATHER VS. CLIMATE INFORMATION

Information describing atmospheric conditions at a specific location on the earth's surface for a short period of hours to days is considered weather information. Climate information is generated through accumulating, analysing and interpreting data relating to atmospheric conditions and patterns over periods of 20 years and longer, spanning a larger area that shares common climate characteristics. Climate information pertains to long-term patterns in air and surface temperatures, air pressure, humidity, wind speed and direction, precipitation or rainfall, soil moisture, surface runoff and sea levels. The latter three variables show the close connections between climate and related forms of information, such as water and ocean or marine information. Climate information is generated by analysing both historical observations, collected from monitoring stations and satellites, and future projections based on simulated data from running various computational models.

A broad definition of climate information could extend to descriptions of climate impacts, risks and vulnerabilities that combine atmospheric information with other environmental, social and economic information. Climate information can extend beyond scientific forms of information to include indigenous forms of climate information, based on localized, long-term observations and the inference of patterns, using different methods and approaches to those of scientists.

While weather information is used by city governments for the short-term operational management decisions, climate information – especially forward looking information that accounts for decadal changes underway as a result of rising concentrations of greenhouse gases in the atmosphere globally – is vital for the policy making, strategic planning, investment and long-term management decisions towards climate-resilient cities.



FOSTERING A DIVERSE AND INTERCONNECTED CLIMATE INFORMATION ECOSYSTEM

A SYSTEM OF CO-PRODUCTION, NOT A SUPPLY CHAIN

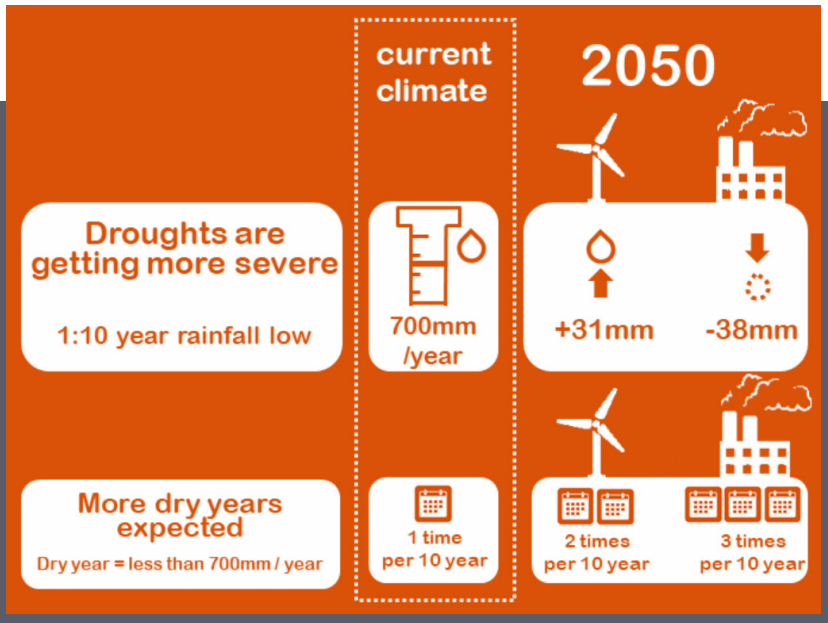
There are many urban decisions that need to integrate climate information in order to build a resilient city. These range from infrastructure planning and management (especially drainage, water, sewage, transport and energy infrastructure), to land use regulation, building requirements, health services, disaster management and insurance schemes. This involves many actors, with different information needs. As such, it is important that we do not talk about delivering climate information to cities in any singular way.

The research shows that the capacity of those involved in co-producing, translating and using the information is enhanced through iterative attempts at doing so, which is a long and slow process. Consequently sustained engagement is key to effective integration of climate information into urban decision making. In order to get policy traction on climate-related matters, climate information needs to be tailored to technical and political needs. The timing of when the information is brought into the decision-making process matters greatly for ensuring the salience of the information is recognized. The translation of biophysical climate information into information about local risks, socio-economic impacts, adaptation measures and opportunities for urban value creation and city improvement is central to the application and use of the information in decision-making. But it is equally important to maintain traceability back to underlying biophysical climate information, so that robustness and defensibility of conclusions and decisions reached can be checked and reevaluated as new information becomes available.

The research suggests that key to generating actionable climate information and integrating it into decision-making is:

- Building communication and mutual trust between those involved in generating and using climate-related data and information (across organisations, sectors and scales) to establish the legitimacy of the process and thereby the ability to integrate the resulting products and outcomes into all relevant decision-making processes.
- Overcoming an initial lack of knowledge from all sides about what information is needed and best suited to addressing the unique problems and decisions in a particular city context.
- Persisting through various unsuccessful or only partially successful attempts as matching information supply with decision needs.
- Reconciling the spatial and temporal scales of climate information and other decision factors.
- Grappling with technical and lay interpretations and implications of uncertainties, likelihoods and probabilities.
- Navigating different approaches to problem formulation, problem solving and decision making, different organizational mandates and career incentives between technicians, scientists, managers and political actors.
- All of the above require staffing and resourcing to engage repeatedly to enable iterative development and refinement of the information to meet and shape evolving decision needs and opportunities.

The findings from the local cases highlight that there is important experience to learn from but that lots is still required to do this more effectively within and between cities, as part of fostering the South African climate information ecosystem.



Climate infographic on changing drought risk facing eThekwini Municipality from their Climate Projections and Risk Assessment story map developed by Climate Adaptation Services and FutureWater under C40 Climate Action Planning programme. https://bit.ly/2QBtdB7

NEXT STEPS TOWARDS FOSTERING A CLIMATE INFORMATION ECOSYSTEM

Based on reviewing international literature and conducting four case studies in South African metros, the following actions may prove important next steps to foster the climate information ecosystem that we need:

- Conduct a full audit of all climate data and information held by metropolitan governments, whether generated internally or commissioned from external service providers, and what that data and information has been or is being used for. The audit should be the basis of a needs assessment.
- Establish an Urban Climate Resilience Indicators, Monitoring and Evaluation Working Group with wide representation mandated to: review the status quo of climate data collection and availability; guide the integration of existing data set and curation of existing climate information at the municipal scale; and strategise around the means to fill key gaps in the evidence base.
- Articulate policy priorities, structure funding and maintain partnerships to ensure consistent and continuous monitoring of key climate-related variables over decadal timescales. Expertise in data management and integration must be prioritised and invested in.
- Ensure that the research 'community' (tackling current fragmentation) plays a key role in codesigning the indicators framework and contributing to (including co-resourcing) the implementation of the monitoring network and the data processing, integration and analysis work. Tailored professional training is also essential.
- Undertake follow-up research to investigate and document a set of cases that focus on the use of emissions and climate change mitigation information in city decision-making, to draw learning across and develop synergies between the climate adaptation and mitigation domains.

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ABOUT THIS BRIEFING NOTE

This briefing note was prepared by Dr Anna Taylor on behalf of the African Centre for Cities as part of a package of work commissioned by the Cities Support Programme. This briefing note based on a full paper entitled *Climate information for building climate resilient South African cities* which is available from www.africancentreforcities.net

CONTACT INFORMATION

Anna Taylor
anna.taylor@uct.ac.za