



Data and research as key enablers of city outcomes: Forward-looking objectives for the City of Cape Town

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- This policy brief aims to understand how the City of Cape Town (CCT) can use data and research to improve the efficiency of infrastructure investments and service delivery.
- It is recommended that the city focuses on its citizens' needs as core informers of the Core Application Refresh (CAR) and Digital Strategy. Rather than spending time on building apps, the city ought to create an enabling environment for other stakeholders to build apps that incorporate city services.
- It is also suggested that the city co-design the open data portal alongside users and other stakeholders while strengthening policy adherence and in-house skills around data and research.
- The city should develop more clearly defined protocols for evaluating external research requests and the return of results while further developing demand-led research commissioning.

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Introduction

This policy brief complements the [case study](#) “Data and research as key enablers of city outcomes: a case study of the City of Cape Town (2000 - 2022).” Bringing expert insights to reflect on the city’s progress made over the last 20+ years, the brief outlines a few considerations for forward-looking focus areas to build on this progress and to contribute to the stronger use of evidence to guide planning, decisions, and implementation in the City of Cape Town (CCT). The feedback ranges from broad visions and policy directions to more specific and practical recommendations within existing work streams.¹

The City of Cape Town (CCT) has taken a very pragmatic approach over two decades: first integrating and automating its business processes, then setting the policy environment for information and knowledge management through data storing and sharing platforms. The city then established transversal data and research policies and invested in new skills to generate value from administrative data collected over decades of practice.

Going forward, key city policies, strategies, and programmes include:

- A new digital strategy, including a core application refresh and future vision for e-services platforms.
- The data strategy refresh and the Executive Mayor’s open data for open government initiative – key focus areas include improving the open data portal, getting more externally generated data, data governance and standards, and building capacity and maturity in data use.
- Building research capacity and maturity – including interacting with external researchers and focusing research on the city’s core objectives.

Digital strategy

Key message: prioritise the users of city services and their needs.

Digital Strategy and Design

Experts commend the City of Cape Town’s Enterprise Resource Planning (ERP) journey, noting that the city’s approach, governance, and implementation exemplify international best practices.

- Approach: introducing the ERP was seen as part of a larger transformation and business improvement journey that the city was embarking on in the early 2000s to prepare for broader economic

¹ The content consolidates a broad range of views and opinions, and therefore may not be representative of the views of all contributors.

changes (manufacturing was in decline, while tourism and IT were on the rise). As such, business needs drove technology investments.

- Governance: there was bi-partisan political support, senior management buy-in, and constant communication with citizens, unions, and communities through an interested press.
- Implementation: there were multi-functional teams with cross-departmental collaboration. CCT first integrated foundational functions and then built other needed modules over time.

With the Core Application Refresh (CAR) and the Digital Strategy preparation taking place now (2022), the city is at another critical juncture where it must think through how centres of power in local governance and related urban planning and policy are changing with the increased acceptance of evidence-based decision-making and growing expectation of citizens' inclusion.

At this stage, going beyond the digitisation of business processes, it is important that the city focuses on its citizens' needs as core informers of the CAR and Digital Strategy. This would necessitate **strong resident and user profiles** as a starting point.

In terms of the city's core internal systems and external sharing platforms, progressing towards better outcomes for the wider city through **citizen-centric design** would involve **thinking of these as services instead of as systems or platforms**,² and tailoring services around how users would interact with the it.³ This approach entails including users in evaluating initial designs and monitoring their use in the long term.

Given that the digital strategy is housed currently in the CCT Information Systems and Technology (IS&T) department, it is important to find ways to ensure direct connections to the city departments focussed on service delivery. This is both to feed into the initial planning stages and to ensure digitisation flows throughout the organisation rather than being left to the technology specialists. Without strong links and co-generation, the strategy risks not realising the strengths of those with both domain and technical expertise. Experts have also suggested that KPIs should be linked to user-centred design for this to be institutionalised.

E-services

CCT has displayed continuous innovation over the years in developing its e-services, websites, and apps, adding different functionalities over time as different needs have arisen. Experts note, however, that the myriad of underutilised city apps and websites worldwide – relative to those designed by

² For more information see <https://gds.blog.gov.uk/2018/04/04/what-do-we-mean-when-we-talk-about-services/>

³ For more information see <https://www.interaction-design.org/literature/topics/user-centered-design>

other stakeholders – signifies that resources could be better placed. The city's focus should remain on its core business of delivering services rather than app design.

As such, CCT may benefit from considering how best to **set the enabling environment for other stakeholders to design apps** that incorporate core city services rather than designing them itself. Citizens' use of the open data portal and city apps is very low relative to citizens' use of secondary apps that are built using city data, such as Citymapper, or in South Africa, apps like "ESP." These apps should not require significant data and should include a wide range of users.

Open data and data strategy refresh

Key message: Co-design the open data portal alongside users and other stakeholders and strengthen policy adherence as well as in-house and user capacities.

Open data portal

With the migration of data from the city's earlier version to the new open data portal, an ongoing challenge remains in increasing public uptake of the portal and following up on outputs and value generated from using the portal. Very few users send their analysis or results back to the city.

There is a maximum value that can be achieved with the technical design of the open data portal. The real value comes from the **soft design of the portal**. This includes developing guidelines for users with detailed explanations for different audiences and directions to place data requests or to send in errors or suggestions. Increased usability facilitates more human interaction between users (residents) and designers (the city). Suggestions from experts include⁴:

- Improving the design of the user interface.
- Improving the findability of data, allowing for metadata to be searchable.
- Improving the variety and volume of data, showcasing insights through public dashboards.
- Capturing statistics such as the number of downloads, key term searches, and interactions with dashboards and using this information to prioritise investments.
- Ensuring that data is uploaded in a variety of commonly required formats.

⁴ For more information see https://docs.google.com/document/d/1GPDnSYPYXYCgAayUYs2jkcT4hKUMMFj2tFEu_UZ0QfY/edit#heading=h.4h563f8bfs06

- Funding local organisations to use data from the portal in novel ways, with an agreement that they should showcase possible outcomes on the portal.

Getting more externally generated data

Alongside the above improvements, to get as much value out of the portal, it is also suggested that **external stakeholders’ data should be leveraged to fill data gaps**. In this respect, the portal would need to collaborate with a “community of users” – mirroring the design of GitHub, as Amsterdam has done, spotlighting how the portal is being used.

Data Plymouth runs data “play days,”⁵ encouraging users to play with datasets on the portal using their skills – such as coding, analysis, or mapping. Crowdsourcing skills not only increase usability, visibility, and externally generated information sets. With play days being themed according to city challenges, such skills could also help with **co-producing urban solutions alongside the users of the portal**. In the CCT context, this may involve ad-hoc “play day” events or redesigning the portal as a data discovery service in the long term – crowdsourcing information from residents and other stakeholders, as the French national data portal has done.⁶

Open data experts recommend that the city take discussions of data ethics further, particularly on how best to ensure that openness is felt by all residents, including those in informal settlements or working in informal sectors. The city’s existing Comprehensive Knowledge Archive Network (CKAN) portal has differential access functions that could be leveraged further to partner and collaborate with external stakeholders who have data on informal sectors, pairing datasets with key city datasets to close gaps. Collaborating with local organisations like Asivikelane⁷ (who collect data on informal settlement resident’s access to basic services) by allowing different levels of access to the CKAN portal would particularly help to close the informal settlement data gap.

In all instances where CCT welcomes external data on its portals, the city would need to create a system to ensure that data is credible and verifiable. In the case of informal settlements, this usually involves an internal desktop analysis of external data against existing datasets, followed by community engagement to verify the results and priority areas for interventions.⁸

⁵ For more information see <http://www.dataplymouth.co.uk/dataplay>

⁶ For more information see <https://www.etalab.gouv.fr/thenextgenerationofdata-gouv-frcommunityofpublishersandusersofopengovernmentdata/>

⁷ For more information see <https://asivikelane.org/>

⁸ For more information see <https://sasdialliance.org.za/wp-content/uploads/2020/07/EnumerationGuide-NGO-v04-small-spread.pdf>

Experts note that acquiring access to donor-funded private-sector data⁹ is not sustainable. Further, the private sector is often more willing to make data available for city use to respond to crises. However, these agreements may not extend beyond that period of crisis and may come with limitations on use. Instead, in the long term, the city could consider possible sharing and exchange arrangements for private-sector data. Alternatively, some cities and countries such as Singapore, Vietnam, and Rwanda mandate data sharing as part of the company or organisation's right or licence to operate in the city or country.

Data governance and standards

Good governance of data, which builds trust in local government,¹⁰ is an increasing priority in city agendas. **Stringent adherence to data governance policies will be needed** going forward, especially in light of the data strategy refresh, if data sharing is to be expanded.

The city-wide taxonomy/inventory for city data currently underway through the data governance workstream is an important step towards standardisation. However, it is suggested that the city ensure not only internal standardisation but also links **to national and global practices, enabling comparison and integrated projects.**

Building capacity/maturity in data use

Experts caution that, as the culture of data sharing becomes entrenched organisation-wide, those working with data and technology will start to hold more power within local government. This will require an organisational shift and accompanying skills. The city is now at a critical juncture to think about how the organisation will cope with increased sharing and the associated burdens of data cleaning and accessibility.

To date, data governance in CCT has involved appointing a central Chief Data Officer, as well as data stewards and custodians in each department, as part of existing responsibilities. However, data-driven governance will likely require more capacity. One option for the city to consider is **formalising these roles as full-time responsibilities** rather than as part of an existing portfolio to drive maturity throughout the organisation.

Appointing a Chief Technology Officer *in each department* has also shown to drive capacity and maturity throughout the organisation in other cities, overseeing departmental technology and digital needs.

Ensuring that users (residents, citizens, and other users) have the skills to interact with digital city services and data creates a market and increased

⁹ For more information see <https://www.gsma.com/mobilefordevelopment/resources/innovative-data-for-urban-planning-the-opportunities-and-challenges-of-public-private-data-partnerships/>

¹⁰ For more information see <https://oecd-development-matters.org/2021/05/12/why-governing-data-is-key-for-the-future-of-cities/>

demand for systems, broadening the benefits of these investments. Building user capacity might involve data literacy programmes led by the city or leveraging and better supporting existing external programmes.

Deciding which capacities are better built in-house and which are better sourced externally is also crucial going forward. External experts are more adept at datasets or analyses that require niche specialist skill sets, particularly in one-off or short-term projects. City staff hold more domain knowledge and are more adept at turning analyses into policy-relevant recommendations. The city should also consider the cost of procurement for each specific project with external experts, and the risk of a lack of continuity.

The value of investing in data

It is necessary to **understand the broad benefits of opening access to city data** to achieve the city's goals and to facilitate innovation in the broader city ecosystem. Access to information creates public goods, and by increasing public access and use, the city is maximising every rand spent on technology, data, and research. Whether this outweighs the cost of time spent improving data quality and automation will need to be assessed.

The need for experimentation

It is also important for cities to **establish a degree of risk and experimentation**. This involves working out new ways for communities, researchers, and businesses to trust and accompany the city on its journey. Examples include Amsterdam going fully open source and Barcelona experimenting with digital rights.

Research

Key message: develop more clearly defined protocols for evaluating external research requests and the return of results, and further develop demand-led research commissioning.

Managing external researcher requests

It is rare and unique for cities to facilitate research using city resources as a public good. While doing so is certainly commendable, it also comes with risks that need to be well-managed, as the case study has highlighted.

Managing external research requests (which are particularly high during times of crisis) takes up valuable time and city resources that could be spent on other activities. Moreover, the city often does not benefit as results or reports are rarely returned to the city after the completion of research, particularly when conducted by individual researchers.

Experts have remarked that given the high value of city datasets and interviews with city officials, researchers should be required to return the findings, lessons, and data analytics to ensure that the city benefits from the time invested in these projects. This is particularly important in research collaborations and partnerships.

To enforce this, one option could be to **develop more clearly defined protocols around the evaluation of external research requests and the return of results**. For example, should researchers not return their enriched city data and results, their future research requests could be impacted. This could also be monitored at the institutional level – creating institutional obligations for researchers to follow through on requirements to share results and value-added data.

While the research request application portal that is soon to be activated will aid in increasing administrative efficiencies and managing the volume of requests, experts also posed additional options to limit the burden on the city, including:

- Creating **set windows of time** in the city's business year when applications will be reviewed and linked to local and international research and degree cycles.
- Establishing an externally funded **independent academic consortium** to evaluate the research requests. This would protect the city from spending valuable time and resources and from any disputes.
- Only facilitating research requests that **align with the city's goals** or research needs. This may be challenging and must be weighed against the loss of providing broader public goods.

These options all pose trade-offs and need to be assessed for feasibility in terms of internal and external impact before proceeding.

Setting research priorities and building internal capacity

The city, as a part of its planning processes, also requires research either to be done in-house or commissioned to research institutions or consultancies. Experts suggest that while the city needs to perform operational research in-house, rigorous academic research is best left to specialists. However, the city should continue to ensure that they **build their capacity to consume and critically engage or evaluate academic research** through research literacy programs and/or embedded researchers. They should also continue to learn about new tools and methodologies that might be helpful for in-house activities. The city already has a Manager of Research, demonstrating the level of commitment to this issue.

Experts also emphasised that **research commissioned or conducted in-house should be strongly tied to the city's core mission** – there should be a clear

link to a policy or decision that needs to be made. CCT could put in place processes to monitor whether research is taken into planning and policy processes, leading to changes in decision-making and, ultimately, improvements in city outcomes.

In the spirit of prioritising limited resources, it was suggested that the city should not focus on tracking outcomes or indicators that are stagnant and do not change, or that they do not have direct influence over, but rather **focus on evaluating policies, reforms and interventions**. Beyond responding to citizen and business needs, research should continue to anticipate those needs.

Different mechanisms for engagement could also be explored to **attract researchers to the city's research agenda**, targeting those who would otherwise not work with the city and who may be attracted by the offer of city data and the opportunity to collaborate.

A note on inputs:

Inputs were gathered from interviews in July 2022, as well as the preliminary dissemination of the case study in January 2023, from the following experts:

- Omar Masud, CEO: Urban Unit, Pakistan;
- Matthew Adendorff, Data Science Lead: Open Cities Lab;
- Richard Gevers, Executive Director: Open Cities Lab;
- George Kibala Bauer, Director: GSMA;
- Craig Kesson, Partner: PwC;
- Ed Glaeser, Research Programme Director: IGC;
- Nick Tsivanidis, Research Programme Director: IGC;
- Ben Snaith, Researcher: ODI;
- Josh D'Addario, Principal Consultant: ODI;
- Greg Munro, Director: Cities Alliance
- Kelsey Jack, Associate Professor: UCSB

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