Dynamic Capabilities for Transformative Change in City Governments

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WORKING PAPER
WP 2025–03

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Abstract

City governments face growing challenges in driving transformative change amidst complex socio-economic and environmental pressures. This paper examines how dynamic capabilities—the ability to adapt, reconfigure, and transform within existing structures—can enable cities to address such challenges effectively. Drawing on case studies from Barcelona, Bogotá, Freetown, and Seattle, we propose a novel framework that integrates structural capacities, organisational routines, and dynamic capabilities to illuminate how these elements interact to foster transformation. Our findings highlight the role of cultivating strategic awareness, adopting focus areas, coalition-building, transforming existing teams and embedding experimentation in addressing institutional and resource constraints, offering actionable insights for policymakers and researchers on advancing transformative urban governance.

Keywords

Transformative change; Dynamic Capabilities; Capability Building; City Government.

Reference

This working paper can be referenced as follows: Kattel, R., Mazzucato, M., Baafi, K., Monge, F., Goulden, A., Gronchi, I., Kalema, N. and Puttick, R. (2025). Dynamic Capabilities for Transformative Change in City Governments. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2025-03).

Available at: https://www.ucl.ac.uk/bartlett/public-purpose/wp2025-03

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Contents

Introduction

For more than a decade, debates among researchers and practitioners in the regional and urban policy space have been marked by a growing focus on transformative change (Grillitsch, Coenen, and Morgan, 2023). While the focus on urban transformative change initially emerged in the context of regional innovation systems and sustainability transitions, current drivers behind increasing interest in transformation have a broader set of causes. Most concern the discrepancy between the contemporary 'polycrisis'—the interrelated, destabilising dynamics of socio-economic, technological, and environmental changes (Lawrence et al., 2024)—and the seeming inability of public sector organisations (PSOs) to cope effectively. City governments perceive this discrepancy particularly acutely as other governmental actors, such as regional and central governments, at least partially delineate their capabilities. Furthermore, the need for transformation has been repeatedly sanctioned within global agenda-setting documents which showed the key role of cities in accelerating (or fighting) climate change, such as the United Nations' 2030 Agenda for Sustainable Development (UN, 2015), the New Urban Agenda (UN, 2016), or International Panel on Climate Change reports (IPCC, 2022).

The broader focus on how PSOs can deal with transformation has been accompanied by a 'normative' turn in how the role of science, technology, and innovation (STI) is understood in the context of societal challenges (Daimer, Hufnagl, Warnke 2012). In the early 2010s, extant instruments and justifications for public action were recognised as unable to account for the need to address 'transformation' failures – that is, the ability of a system to withstand a crisis and, if needed, pivot towards a socially desirable direction (Weber and Rohracher, 2012; Mazzucato, 2014). The rest of the 2010s saw a new wave of proposals aimed at defining how STI policy may usher transformation, such as mission-oriented innovation policy (Mazzucato, 2016), transformative innovation policy (Schot and Steinmueller, 2018), green development policy (Tödtling et al., 2020), or challenge-oriented innovation policy (Cappellano et al., 2024). The emerging normative consensus around STI policies is increasingly relevant for the urban context as cities are asked how they can address contemporary societal challenges by investing in place-based initiatives capable of igniting transformation (cf. Gianelle et al., 2020; Bailey et al., 2023), particularly through the engagement of private and societal actors (Bulkeley et al., 2019).

From a policy perspective, the focus on transformation led to a rise in trans-local initiatives that aim to foster mutual support and peer learning among cities and regions engaged in transformation, including the UN Global Covenant for Mayors, the UN-Habitat's Cities and Climate Change Initiative, the UNDP's Mayors for Economic Growth (M4EG) Facility, C40 Cities. In the EU, the adoption of a new EU-wide Mission for 100 climate-neutral and smart cities by 2030 (Shabb et al., 2022) or the evolution of its main cohesion policy towards a sustainability focus (Schwaag Serger et al., 2023) marked a similar shift. In the US, a revamp of industrial policy unleashed a wave of green manufacturing and infrastructure investments, such as via the Inflation Reduction Act, the CHIPS Act, or Bipartisan Infrastructure Law, which put much focus on their ability not only to hasten urgent transformations but also to tackle deep-rooted geographical inequalities (Gansauer, 2024). Despite this, there is still a limited understanding

among scholars and practitioners alike of how urban and regional policymakers can effectively adopt transformative policy for their challenges.

The concerns surrounding the debate increasingly focus on implementation as the beacon of the challenges faced by transformative policy. This seems to be the case for at least three main reasons. First, the implementation of transformative policy is surrounded by considerable strategic uncertainty: there is limited understanding of how its ambitious agenda – one focused on long-term agenda setting, policy orchestration, and multi-actor collaboration – can be translated into a workable action plan (see OECD and Danish Design Center, 2022; Janssen et al., 2023; see Trippl, Baumgartinger-Seiringer, Kastrup 2024 for a regional perspective). Second, the overarching rationale of transformative policy could be at odds with conventional institutional norms related to how PSOs ensure essential public goods – such as administrative coordination (Braams et al., 2022), democratic accountability (Radosevic et al., 2023), societal stability (Kattel, Drechsler and Karo, 2023) – thus limiting the (real or perceived) legitimacy of any intended transformative action. Third, PSOs are oftentimes found to have limited resources through which to attain their goals, including personnel skills, financial munificence, legal instruments, or organisational mandate (Kattel and Mazzucato, 2018).

In response to the implementation challenges, researchers have provided ever more detailed descriptions of what are the relevant capacities for transformation, particularly in the sustainability space (e.g., Wolfram, 2016; Bhatia et al, 2024), and how such capacities are situated in the broader governance context (e.g., Hölscher, 2020). What is much less understood and under-researched are two interrelated questions: first, how do the interactions between different governance levels (central and local) shape local-level capacities for transformation? Second, what drives changes in local level capacities for transformation?

In this article, we are interested in the evolution of city capacities for transformative change. By understanding better such evolutionary processes within and behind capacities, we can understand better how cities can develop and deploy such capacities in practice. We propose to delineate between capacities and capabilities. We argue that conceptualising capacities as structural capacities (enabling conditions described in broader institutional arrangements), and capabilities as organisational routines of day-to-day activities of PSO, and as dynamic capabilities of adopting and transforming existing routines in light of existing and new challenges enables us to describe interactions and evolution of different levels of capacities and dynamic capabilities for transformative change. In the empirical section of the paper, we show how these processes play out in four cities (Barcelona, Bogota, Freetown and Seattle) as globally relatively well-known examples of transformative change in urban governance. Our selection, thus, follows exploratory rather than comparative logic: we are interested in positive outlier cities in different global contexts. By looking at positive outlier cases, we do not need to define transformative change. Instead, we rely on a scholarly and practitioner consensus opinion (which, of course, can be mistaken and should be critically examined, but this is not our aim with this research).

The article is structured as follows: the next section briefly summarises theoretical discussions and proposes a new conceptualisation of capacities and capabilities in PSOs; we develop three

propositions to be tested. This is followed by a brief methodological section establishing ground rules for the empirical sections based on interviews in four cities. In the discussion section, we revisit our theory-driven propositions, and the conclusions provide avenues for future research.

Theoretical background

Discussions of the capacity to transform systems emerged in the 1970s within the scope of resilience theory, which explored the ability of socio-ecological systems to anticipate, react, and cope with environmental changes which may lead to their irreversible damage – including to human living conditions (Holling, 1973). In the same years, the understanding of cities as complex, non-linear, unpredictable systems shaped by endemic 'wicked problems' gained traction in urban studies literature (Rittel and Webber, 1973). In the past decades, various forms of what can be called transformation research have been carried out predominantly in urban planning, sustainability transitions, and public management literature. The following paragraphs briefly summarise these discussions.

The urban planning literature focused on grounding the concept of transformative capacity into the distinctive dynamics underpinning the behaviour of *urban* stakeholders, places, and processes. The most comprehensive theoretical coding and synthesis of this literature has been done by Wolfram (2016), who defines 'urban transformative capacity' as the ability to "disrupt and dismantle existing systems, and to simultaneously create and build up viable alternatives" within an urban context (Wolfram et al., 2019, 438). The suggested analytical framework identifies ten interdependent variables and 60 underlying factors. The variables specify three agency components (governance; leadership; community of practice); five process components (awareness; foresight; experimentation; institutionalisation; learning); and two relational components (scale; agency). Overall, the framework aims to offer both analytical and practical insights by helping the analyst to situate the institutional work performed by urban policy makers (cf. Lawrence et al., 2006) within the distinctive opportunities and the constraints imposed by the specific actors and features of an urban political economy.

The sustainability transitions literature, for more than twenty years, analysed how socio-technical change happens, including the interaction between emerging niches and extant regimes (Geels, 2002) and policy leverage points for systems change (Kanger et al., 2020). Within this stream of research, Hölscher et al. (2019) identify four PSOs' capacities behind transformative governance: i) stewarding – coping with uncertainty; ii) unlocking – tackling unsustainable practices; iii) transformative – creating or embedding novelty; and iv) orchestrating – leading multi-actor collaboration. Similarly, Borrás and Edler (2020) highlight up to 13 roles which PSOs draw from when governing socio-technical change based on different needs. In a recent contribution, Borrás et al. (2024) claim the process by which PSOs take new roles against new challenges to be the driver of their transformative capacity, that is the interaction between the PSO's roles, resources, and abilities.

The public management literature has been exploring transformation issues only recently. On the one hand, there have been calls for recognising sustainability as a reform principle for management rather than a mere policy tool (Zeemering, 2018, 137). On the other hand, the degree to which these have been received in practice remains unclear (Castán Broto et al., 2019). Braams et al. (2023) identified key institutional conditions in which managers can attempt to enable transformative strategies, including a self-reflexive work culture, flat organisational routines, or informal engagement with societal actors. Similarly, Bhatia et al. (2024) identify 'transformative sustainability management' in cities as enabled by four capabilities: i) strategy formulation, ii) sustainability measurement, iii) collaboration, and iv) reflexivity. These capabilities are also coherent with ongoing scholarly research on the relevance of 'strategising' within collaborative governance (Ysa and Greve, 2023).

Against this theoretical background, two reflections are in order. On the one hand, these three streams of literature present relevant affinities in their conceptualisation of PSOs' role in transformation and in how each map out four similar processes (urban studies), capacities (sustainability transitions), and capabilities (public management) as key to success. On the other hand, they shed little light on how these processes, capacities, or capabilities come about and interact with each other. Borrás et al. (2024) framework hints at how capacity building and public leadership could fuel and 'improve' the interaction among these processes, capacities, and capabilities. However, the dynamics of organisational change that PSOs undergo to 'equip' themselves with the ability to deliver transformative strategies – and the agency driving such efforts – remains mostly a black box, as noted in a swath of recent articles (e.g., Braams et al., 2024; Gullmark and Clausen, 2023; Sørensen and Torfing, 2022).

Sørensen and Torfing (2022) construct a structured multilevel framework of public sector innovation (which we can use here as a form of transformation without going into detailed discussion about what transformation is and what innovation is in the public sector context) that emphasises the relationships between the three orders (innovative solutions, processes, and institutions). We propose to build on the work of Sørensen and Torfing by constructing a framework to analyse opportunities and constraints in the context of city governments; this is done through the explanation of recursively inter-related analytical dimensions of PSOs and, crucially, their micro-mechanisms and underlying patterns.

We propose a multilevel analytical framework capable of capturing relationships between macro-level variables and the micro-mechanisms of transformative processes in city governments. However, rather than focusing on transformation or innovation, we are interested in how various capacities and capabilities of PSOs interact and evolve to enable transformation.

We argue that capacities and capabilities can be understood in a similar multilevel framework (Kattel and Mazzucato, 2025):

- On the macro-level, PSOs are embedded into what we propose to call *structural capacities*,[2] consisting of primarily institutional traits such as 'sovereign integrity as control over state's

2 We owe this term to Dan Hill.

territory; loyal and skilled officials; raising and deploying financial resources (including changes to taxes and earmarked funding, and ability to borrow); and area-specific skills' (Andreoni and Kattel, 2023, p. 387), and infrastructural traits such as geographic location and economic structure and dynamics (Borrás et al., 2024). For cities, such capacities include legal-institutional division of labour with central governments: which level of government can establish and enforce legal norms and institutions and has access to fiscal and financial resources. Structural capacity is both an enabling and constraining environment for city governments. In many ways, it sets the boundaries for routine activities and transformative action. These capacities are naturally slow to change as they require time, significant political changes and investment.

- On the level of meso-level processes, PSOs operate within organisational routines that 'capture the typical ways in which organisations accomplish their tasks' (Becker, 2008, p. 3). Specifically, organisational routines are *recurrent behavioural interaction patterns* (Becker, 2004) and thus undergird the stability of a given organisation and are often in direct interaction with structural capacities. As such, organisational routines can be understood as capabilities to carry out formal and informal 'tasks'. These repetitive tasks can be mapped to six types necessary to perform policy functions: analytical, planning, coordination, evaluation, policy, and participation (Wu et al., 2017; Karo and Kattel, 2018). Crucially, organisational routines are fundamentally collective phenomena (Becker, 2004)—i.e. they refer to the recurrent sequences exercised, rather than those exercised by individuals (who exhibit habits and skills, not routines) (Nelson and Winter, 1982).

- The change in organisational routines is driven by dynamic capabilities as micro-level organisational mechanisms and decisions (Piening, 2013; Kattel, 2022). In strategic management literature, dynamic capabilities are understood as a 'firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.' (Teece, 2023; Teece et al, 1997) Research focused on dynamic capabilities in the public sector has emerged in the last decade (Piening, 2013; Mazzucato and Kattel, 2018; Clausen et al., 2020; Gullmark, 2021, Kattel, 2022). We propose to define the dynamic capabilities of PSOs as a set of specific abilities that enable the renewal of government activities—more specifically, through adapting and transforming organisational routines and, eventually, structural capacities.

In strategic management literature, there are three main types of dynamic capabilities: sensing (identifying opportunities and threats), seizing (mobilising resources and decision-making) and transforming (reconfiguring existing resources and operational routines) (see Teece et al, 1997). In terms of the public sector, there are a number of differences that need to be accounted for: first, most public policies and services require some form of coordination across multiple organisations or even levels of government; second, while technological change and market dynamics play a key role in and for public policies and services, so do legal and institutional mandates and requirements that often require political process and legitimacy to be changed. (Karo and Kattel, 2018; Kattel, 2022; Piening, 2013) In sum, the public sector's dynamic capabilities consist of more capabilities than those of private firms, and we cannot simply copy the concept.

Earlier in this section, we described the main theoretical threads in what we called transformation studies (urban planning, transitions studies, and public management); we can see certain overlaps and additions in how this research understands capacities to transform with dynamic capabilities research in strategic management literature. Wolfram (2016), for instance, talks about awareness and foresight, institutionalisation, experimentation and learning; Höschler et al. (2019) talk about stewarding and orchestration, and Bhatia et al. (2024) proposes strategy formulation and collaboration, among others. We propose a new synthesis of dynamic capabilities as follows, each capability consisting of managerial activities and decisions:[3]

- *Cultivating strategic awareness:* How are PSOs identifying and understanding problems they face and exploring potential opportunities?
- *Adapting focus areas:* How do PSOs balance existing priorities with the flexibility to meet unforeseen needs?
- *Building coalitions:* How do PSOs foster partnerships to maximise resources and impact?
- *Transforming teams:* How are PSOs reshaping skills, resources and ways of working for effective delivery?
- *Embedding experimentation:* How do PSOs foster a culture of continuous learning and innovation?

Table 1 summarises the theoretical origins and the new proposed synthesis of public sector capacities and dynamic capabilities relevant to transformative change.

Table 1: Theoretical synthesis

	Strategic management	**Transformation research**	**Synthesis: Public sector dynamic capabilities**
Focus	Firm level strategy	Sustainability transitions	Public sector organisations
Types of capacities and capabilities	Sensing Seizing Transforming	Awareness and foresight Orchestration and coordination Experimentation and transformation	Cultivating critical awareness Adapting focus areas Building coalitions Transforming teams Embedding experimentation
Interactions	Lower and higher order dynamic capabilities interact with routine operations	Capacities for transformation interact with broader governance context	Dynamic capabilities interact with organisational routines and are embedded in structural capacities

To summarise, we propose that dynamic capabilities, as activities of adaption and renewal of organisational routines, provide an opportunity to catalogue the micro-dynamics of organisational change in pursuit of transformative urban initiatives within their specific structural capacities as enabling and constraining environments. Thus, our *first proposition* to be tested through case studies is that transformative capacities and capabilities in an urban context should be

3 This builds on Kattel, 2022, Kattel et al, 2024, and Kattel and Mazzucato, 2025..

understood as resulting from multilevel interactions between structural capacities, organisational routines and dynamic capabilities. Our *second proposition* to be tested is that within this multilevel construct, dynamic capabilities as activities and managerial decisions drive evolution within organisational routines and, eventually, in structural capacities. And finally, our *third proposition* to be tested is that specific dynamic capabilities interact and change specific organisational routines. Thus, for instance, cultivating strategic awareness should impact routines in organisational units tasked with strategy and analysis more than, say, delivery units.

Methodological approach and case selection

The empirical research was conducted between September 2023 and May 2024 and explores the conceptualisation and deployment of dynamic capabilities in city government.

As dynamic capabilities are complex, we used an interview-based qualitative case study analysis of four city governments to enable an abductive and interpretive approach to test and explore the concept of dynamic capabilities in city governments. The advantage of a case study approach is that it enables a holistic view of city governments to understand complex phenomena (Yin, 1989; Ebneyamini and Moghadam, 2018).

The four city governments case studied were the city councils of: Bogotá, Freetown, Barcelona, and Seattle. The four city governments were chosen to provide geographic distribution, representation from the global south, variation in levels of socio-economic development, the presence of an elected mayor and demonstrable deployment of dynamic capabilities. An elected mayor enabled a comparison of governance arrangements and the influence of autonomous leadership. We deliberately selected city governments with the demonstrable deployment of dynamic capabilities. This assessment was based on our previous research with city governments and from the city governments being documented as both a national and international reference point for an innovative and capable city government, such as, city governments being awarded international prizes or commendations.

We collated and reviewed secondary materials, including policy papers and city government strategies to help contextualise and triangulate the interview data. These documents were found on the city government website and interviewees also shared additional documents.

We conducted semi-structured, qualitative interviews with city government officials. These officials occupy leadership, innovation and strategy roles, including mayoral office representatives, chief administrative officers, innovation managers and data analysts. From academic and grey literature, we identified these roles as those most closely associated with dynamic capabilities in city government. Additionally, interviewing similar officials in each city government enabled us to cross-compare results.

In addition to city government officials, we also interviewed wider urban experts who engage with and can comment on how the case study city governments operate. The wider interviewees

were officials in regional and national government who support and direct city governments, development banks and philanthropic organisations that provide financial and non-financial resources to city governments, and officials in think tanks and academia that study city governments in our sample. Table 2 summarises the different types of interviewees, and the number of interviews conducted in each city government. In total we conducted 22 interviews.

Table 2: Type and number of interviewees

	Number of interviews	
	City government	Wider urban experts
Bogotá City Council	7	1
Freetown City Council	4	1
Barcelona City Council	4	0
Seattle City Council	5	0

We identified participants through policy documents, city government websites, our own existing networks, and through a 'snowball' effect of asking participants to identify relevant actors. From this pool we selected professionals based on their perceived involvement in the governance of the city government. Interviewees outside of the city government, such as philanthropy or development banks, were selected based on the assumed closeness of their relationship to one or more of our sample city governments.

To arrange the interviews, a standard invitation email was sent to all interviewees with a follow-up email to arrange a date and time. All interviews were held online, and interviews were recorded and transcribed when permission was granted.

Case study vignettes

All city case studies are summarised as vignettes and are structured similarly, discussing first their general context and challenges the city faces, followed by the main features of the structural capacities, how the existing organisational routines fall short in tackling its main challenges and how the city is deploying and developing dynamic capabilities in response to shortcomings. The vignettes are predominantly based on interviews and draw upon wider policy documents.

Barcelona

City context

Barcelona is Spain's second-largest city, its metropolitan region spans 160 municipalities with over 5 million inhabitants, forming a natural metropolitan area that extends beyond the city. The city's financial autonomy is constrained, lacking the authority to levy income or business taxes,

thereby relying on alternative local tax streams and budgets allocated by higher government echelons. In terms of regulation, the city's powers are largely contingent upon frameworks established by higher levels of government. The city's regulatory influence primarily focuses on land use and public land allocation for affordable housing projects. In terms of data policy, parameters surrounding security and privacy are pre-established, with the city hall having no jurisdiction over these domains.

Structural capacities

While it has developed strong capacities (including at the metropolitan level with the unique creation of the Barcelona Metropolitan Authority) and widely lauded urban innovations (for instance, superblocks to limit the impact of cars and data sovereignty policies to tackle the power of private digital platforms), it still suffers important constraints in terms of competencies and resources to address its key challenges. First, access to housing, particularly affordability, is a critical issue for the city, with a strained rental market and insufficient social housing stock. High housing costs force many households to allocate over 40% of their income to rent and utilities, threatening their ability to meet other basic needs. Second, fostering a digital economy to upgrade its economic model. Barcelona must enhance technology transfer and private investment in R&D to improve its global competitiveness. Diversifying the economy and fostering innovation are essential for creating quality employment and sustaining economic growth, moving away from a growth model dependent on tourism and low-productivity sectors.

Current challenges and existing routines

In housing, the city faced an organisational structure and processes focused on facilitating the construction and selling of houses. All the operations, skills and governance structures were directed at promoting an ownership model that, in a geographic context with limited land to build new constructions. In data, the city had limited data analytics capacity and is reliant on the Municipal Institute of Informatics for technological support. One significant hurdle is the presence of outdated legacy systems. Concurrently, the data office struggles to attract skilled recruits owing to the city's stringent HR regulations.

In the innovation realm, the city grapples with constrained human and financial resources. The innovation lab, an arm's length foundation from city hall, draws funding from a collaborative partnership with Cisco. Beyond this contingent funding, the city's innovation capabilities are quite constrained. Procurement challenges are universally acknowledged.

The city implemented innovative solutions across the housing sector, data policy, and innovation initiatives by leveraging its existing structural capacities and organisational routines while fostering dynamic capabilities. In housing, it developed a strategic blueprint inspired by international best practices and established a metropolitan observatory. This observatory enhanced the city's ability to collect and analyse data, enabling effective policy evaluation, trend analysis, and timely adjustments. By nurturing a cooperative ecosystem of housing providers and forming alliances with private and third-sector partners, the city leveraged its housing authority's capacity to unify diverse stakeholders. This approach resulted in a decentralised network

that collaboratively addressed the housing affordability crisis through mutual investment and increased the stock of accessible and sustainable rental housing.

In data policy, the city capitalised on its structural capacities by creating a cross-departmental data board comprising directors and technical staff familiar with data's intrinsic value. Initially acting as a supportive analytical unit for other departments, the data office leveraged its collaborative reputation to transition into a more proactive role. It began spearheading analytics projects based on its own strategic vision, introducing data sovereignty clauses in significant tenders to reshape market dynamics. This not only established clear guidelines for data sharing with the government but also contributed to a data commons infrastructure that promotes innovation and solution development.

Deploying dynamic capabilities to develop new solutions

The innovation lab mirrored this strategic leveraging of organisational routines by fostering continuous dialogue between departments and the broader urban innovation ecosystem. Through both formal board meetings and informal interactions, the lab identified departmental needs and connected them with innovative solutions. The manager's personal network was instrumental in coordinating policies across the innovation spectrum. By retaining open intellectual property rights on tested solutions and providing detailed procurement specifications, the lab shaped the market to align with the city's objectives, such as adopting carbon-neutral technologies, thus broadening market participation.

The city deployed dynamic capabilities throughout these initiatives by adapting roles and frameworks to meet emerging challenges. It used legislative provisions to prioritise the acquisition of auctioned houses, preventing speculative purchases and enhancing the rental housing stock. The municipal data office developed a strategic framework for selecting data projects, focusing on systemic change and sustainability opportunities. While innovation efforts were characterised by experimental approaches and the embedding of multidisciplinary expertise, the city recognised the need for established routines to facilitate learning, particularly within the data office and innovation lab, to ensure the continual development of dynamic capabilities.

Bogotá

City context

Bogotá is Colombia’s sprawling, high-altitude capital, with a population of almost 8 million people. Bogotá City Council has a mayor responsible for the city administration alongside 45 councillors, all of whom are elected every four years. Bogota has become almost synonymous with bold innovative urban policies in recent years.

Structural capacities

Bogotá city council is administered independently from the rest of the state and has a relatively high degree of autonomy. The mayor of Bogotá has relatively strong powers across many different sectors, including education, health and transport. In contrast, the 20 local

administrative boards, each made up of 7–11 members, have relatively few responsibilities.[4] In many policy areas, the national government plays a pivotal role. For example, when developing its digital capabilities, the national Ministry of ICT decrees digital policy, and the Bogotá City Council works to implement it. Another policy area that involves the national government and sometimes has the attention of the president is large-scale infrastructure projects, such as the creation of a metro system in Bogotá. As Bogota makes up a quarter of Columbia's GDP, its relationship with central government is often symbiotic: if the city does well, the country does well.

Current challenges and existing routines

A major issue that potentially negatively impacts Bogotá City Council's ability to deliver is the 4-year mayoral term. The limited term has important implications for developing and sustaining capabilities and institutional knowledge. As an example, to avoid bureaucratic hiring rules and processes and ensure trusted advisors (often of the same political persuasion) are recruited, key staff are often hired as contractors, not as civil servants. This means that their contracts end at the end of the 4-year term.

One flagship and award-winning programme is Care Blocks ("Manzanas del Cuidado"). Prompted by recognition that women in Bogotá disproportionately shoulder the burden of caregiving to the young, elderly and disabled, and this can force them out of education and employment and entrench inequalities in economic, social and political participation, Care Blocks has created a new care system in Bogotá (López Hernández, 2023). Care Blocks involves providing professional care – free of charge – to those who need it, freeing up caregivers to access vocational and educational training, psychological and legal counselling, exercise classes and laundry services (López Hernández, 2023). Care Blocks has helped improve the lives of more than 546,500 women and their families (What Works Cities, 2023).

Deploying dynamic capabilities to develop new solutions

In Bogotá City Council, capabilities are conceptualised around human capital and the creation of teams and units to provide leadership, innovation, data, and delivery abilities. Within the city government, the key teams and organisations are:

1. **The Delivery Unit.** The monitoring and successful implementation of priority policies is led by the Delivery Unit de Bogotá, providing both technical and leadership abilities.

2. **The Public Sector Innovation Lab** helps understand citizens' perspectives on a problem and to develop solutions. For the Care Blocks programme, the Lab improved the user experience and helped city officials understand the role of women in providing care. It also helps advance innovation in public sector procurement by advancing mechanisms and legal instruments to help the city deploy a challenge-led procurement approach to source solutions.

3. **Ágata** is a unit created to help harness data to promote more intelligent decision-making by Bogotá City Council.

4 This structure is succinctly summarised here: https://urbanage.lsecities.net/data/governance-structure-bogota.

Freetown

City context

With a population of over 1 million, Freetown, Sierra Leone, is navigating growing economic and political dynamism and persisting, difficult developmental challenges. Freetown City Council (FCC) faced mounting demands during the last decade – including addressing essential service deficits (such as waste management and urban mobility) alongside long-term issues (such as climate change and sustainable development). To address these challenges in an integrated fashion, the Mayor Yvonne Aki-Sawyerr –implemented a strategic plan, 'Transform Freetown' (2018-2028), a comprehensive policy initiative which seeks to foster climate adaptation and resilience, sustainable urban development, and economic growth.

Structural capacities

In terms of structural capacities, personnel are split among the core administration, approximately 550 people led by a Chief Administrator and the Mayor's Delivery Unit with 30-50 'handpicked' people steering the delivery of Transform Freetown). New roles have been created to ensure the availability of leadership and resources for policy delivery, such as the role of Chief Heat Officer to help tackle the climate crisis.

At the same time, there are fiscal constraints. Around 94% of Transform Freetown's funding comes from external donors, which makes the city government vulnerable to discontinued funding and hinders longer-term planning and investments. Workforce constraints include low civil servant salaries and inadequate skill development practices, undermining organisational efficiency and motivation. Data constraints include the absence of comprehensive data systems for informed decision-making. Political constraints include frictions between the city and central government, often driven by partisan rivalries, complicating efforts at implementing legislative acts.

Current challenges and existing routines

A range of partnerships with international donors have helped FCC finance and implement critical components of Transform Freetown, including heat mitigation policies, major reforestation campaigns, progress towards key infrastructural investments, as well as waste management reforms.

Yet there are tensions between the old organisational routines of the core administration and the dynamic capabilities enabled by the Mayor's Delivery Unit. From an external perspective, the persistence of considerable disparities – particularly with respect to infrastructures and service delivery in underdeveloped or rural areas – further underscored the need to deepen efforts for more inclusive, holistic approaches to Freetown's development.

Deploying dynamic capabilities to develop new solutions

Freetown City Council is aware that successfully tackling current and future challenges will rely not just on specific initiatives, but on its own ability to consolidate the development of its core administration. To tackle fiscal constraints, the FCC pursued a radical modernisation of

its tax system – including new revenue sources and the digitalisation of property tax – aimed to enhance financial independence and greater public accountability – including through participatory budgeting. To tackle workforce constraints, efforts were pursued by a new Chief Administrator to bridge divisions between the Mayor's Delivery Unit and the core administration through the adoption of practices aimed at fostering peer learning among them. Last, to tackle data constraints, greater focus on stakeholder engagement and experimentation has been embedded into policy design and implementation – notably, along with digitalisation processes.

Seattle

City context

With over 700,000 residents, Seattle is the largest city in the state of Washington, USA. Challenges facing the city include housing and affordability, equity and opportunity, community and neighbourhoods, climate and sustainability.

Structural capacity

The City of Seattle has a strong mayor form of government, also known as an executive government. The City of Seattle consists of three branches: the Mayor's Office, the Seattle City Council, the legislative arm of the government, and the City Attorney which provides legal counsel to the City of Seattle. The Mayor's Office controls all executive departments which includes appointing directors and controlling budgets. Operating in a federal system, US cities benefit from relatively high levels of autonomy.

Current challenges and existing routines

There is a considerable emphasis on the need to carefully manage relationships with other government organisations at the city, state and national levels to ensure a clear division of funding and responsibilities.

One major challenge facing the city government is the opioid crisis. This requires government officials to understand what can be delivered inside the government and externally, and what resourcing and capabilities for problem-solving exist.

Deploying dynamic capabilities to develop new solutions

Seattle is deploying and developing dynamic capabilities through following activities:

- **Building data capacity.** The One Seattle Data Strategy aims to improve the collection, storage, use and sharing of data. Examples of data use include improving parking and traffic flows in the city, creating dashboards for monitoring issues like homelessness, evaluating policy efficacy, and managing national government funding. The city is also implementing 'equity analytics training' to empower employees to leverage data for decision-making. However, building the necessary data skills and infrastructure is challenging, with inadequate infrastructure hindering the city's ability to utilise interdepartmental data sharing and there are difficulties defining and hiring for new roles.

- **Partnerships.** Partnering with academic institutions, tech companies, and philanthropies can help overcome the city's funding deficit. However, navigating external partnerships can be challenging without a guiding process or framework. This has resulted in distortion of competition among partners, legal challenges in contractual arrangements, and difficulty navigating technical details. Furthermore, there is a risk that partnerships detract from internal capacity by building reliance on external consultants.

Discussion

We found that dynamic capabilities were often embedded in or directly interacting with organisational routines and structural capacities in city governments. The organisational routines predominately included digital routines, budgeting, procurement, infrastructure and spatial planning. This finding resonates with our conceptualisation of dynamic capabilities that city governments adapt and transform resources, processes and skills in response to an ever-evolving environment with constantly shifting demands, challenges, and needs. The case study findings indicated that organisational routines and dynamic capabilities are distributed, often unevenly, across city government departments and teams. The implementation of dynamic capabilities is, therefore, fragmented across cities (from one city to another) and within them (from one team or department to another).

In all four case studies, dynamic capabilities are being developed through combining city government's internal and external resources. Internally, political leadership is critical in setting the strategic direction for capability development and deployment. The ability to recruit and retain talent is equally essential, though in many cases is restricted by structural capacities. Externally, partnerships with philanthropies, development banks, non-profit organisations and the private sector can help address funding and capacity gaps, as well as support innovation and capability development. However, such partnerships require careful management and can create fragility and dependencies, especially when collaborations are short-term.

Cultivating strategic awareness

The cultivating strategic awareness capability refers to a public organisation's system awareness—reading and scanning its strategic environment to analyse threats and opportunities and discern potential challenges and political leverage points. This capability is operationalised by cities' careful management of relationships with other city governments across horizontal and vertical scales and citizens/residents (Bogotá, Seattle). This capability is further operationalised by cities' garnering of support from political leadership for priority setting, obtaining external organisation (e.g., philanthropies, development banks, and global development organisations) funds to develop internal capacities (Bogota, Freetown), and harnessing data-driven approaches (e.g., identify the root causes of challenges; Seattle) and real-time monitoring (Barcelona, Freetown)). Increasingly, concerning citizen-needs identification, digital data are a critical enabler of this capability (Freetown, Seattle).

Challenges to operationalising this dynamic capability arise when cities' collaborations with external actors for revenue supplementation and coalition- and capacity-building undermine its self-sufficiency (e.g., funding for projects but not staffing) or drain its limited internal resources (e.g., withdrawal of external funds stalling projects) (Freetown). Further, lacking resources can diminish a public organisation's ability to attract human capital (Barcelona, Freetown).

Adapting focus areas

The adapting focus areas dynamic capability refers to a public organisation's ability to balance existing priorities and agendas with new unforeseen challenges. This capability is operationalised by cities' strategic investment and allocation of resources, both monetary and non-monetary, and forging of broader coalitions of support for policy development, capacity building, and external funding (Bogotá, Seattle). This capability is further operationalised through bias-avoidant and innovation-encouraging decision-making and stakeholder management procedures (e.g., transparency requirements) that ensure innovation aims around service delivery improvements are primarily citizens' needs directed and prioritising (Barcelona, Seattle). Both modes of operation must work in tandem to balance the embedded political vision and grounded perspectives of citizens guiding these efforts.

Challenges to operationalising this dynamic capability arise when cities engage in experimentation not to seize opportunities but due to a lack of choice, as shaped by substantial financial constraints, that can increase risks and vulnerabilities (Freetown).

Building coalitions

The building coalitions dynamic capability refers to a public organisation's coordination of its performed functions and their linkage to external environments (e.g., policy coordination). This capability is operationalised by cities' creation of more interlinkages between public tasks and external actors to increase those tasks' effectiveness and efficiency and overall sectoral capacity organisationally and spatially throughout a city (Barcelona). These can be cultivated through a city's collaboration with grassroots, global development, philanthropic, and research organisations (Bogotá, Freetown, Seattle) and global digital policy leadership efforts (Barcelona). For both interlinkages and collaborations, data and data-sharing practices are perceived as critical enablers of this capability (Seattle). Further, cities are creating both horizontal (e.g., within and between organisations) and vertical (e.g., between leadership and frontline staff) interlinkages across various policy arenas and public tasks (Barcelona) and restructuring administrative and organisational processes where necessary across units (Seattle), often occurring in tandem and in connection to an external environment.

Challenges to operationalising this dynamic capability arise for cities due to the need for a clearer distinction between whole-of-government coordination versus internal organisational restructuring processes (Seattle). Also, the fragmented and unevenly distributed implementation of dynamic capabilities across cities' various parts and sectors and state capacity adds complexity.

Transforming teams

The transforming teams dynamic capability refers to a public organisation's ability to adapt to external environment changes by transforming its internal resources (e.g., organisational routines), using several key types of learning — cross-sectoral, administrative, technical, and political. This capability is operationalised by cities' formation of new and innovative cross-functional units, teams, and roles throughout a public organisation (Bogotá, Freetown) and administrative process reforms (e.g., revenue mobilisation and fiscal management) (Seattle, Freetown). This capability is further operationalised by cities' integration of data-driven technologies and systems into their internal procurement and service delivery processes to obtain more real-time insights into resourcing capacities and needs for the effective and efficient implementation of projects and policies (Barcelona, Bogotá, Freetown, Seattle). Additionally, this capability is further operationalised by cities' transformation of their interactions and partnerships with private actors into more equitable arrangements through the integration of public-value promoting terms and conditions (e.g., data sovereignty and open intellectual property rights requirements) across its agreement and procurement contracts (Barcelona).

Challenges to operationalising this dynamic capability arise where cities when external environmental factors (e.g., electoral cycles and outsourcing) adversely impact the long-term sustainability of a project (Freetown) or substantively diminish an organisation's internal resources over time (Bogotá).

Embedding experimentation

The embedding experimentation dynamic capability refers to a public organisation's ability to control and manage how its developed routines are monitored and assessed and whether and when they are institutionalised, modified, or discarded. This capability is operationalised by cities' embedding of innovative and effective routines that are then dispersed throughout a public organisation's various units and creation of capacity building-enhancing roles across policy domains and government sectors (Barcelona, Freetown). Specific practical examples may include peer-to-peer networks, improvement recommendation practices, collaborative learning spaces, and capacity-building training. Further, this capability is operationalised through different types of learning, including administrative and technical learnings captured through the creation of new cross-functional roles, teams, and mindsets (Freetown, Seattle) and new data-driven models of academic learning and everyday-informed, evidence-based policy making (Bogotá).

Challenges to cities' operationalising of this dynamic capability are that the key characteristics of each specialised learning types (political, administrative, and technical) require further characterisation to draw out the distinctions between each type and identify mutual ties.

Conclusions

This study set out to explore how city governments can develop and deploy dynamic capabilities to drive transformative change. Based on the analysis of four cities—Barcelona, Bogotá, Freetown, and Seattle—we tested three interrelated propositions that illuminate the interplay of structural capacities, organisational routines, and dynamic capabilities in fostering urban transformation.

Proposition 1: Transformative changes in an urban context result from multilevel interactions between structural capacities, organisational routines, and dynamic capabilities. Our findings demonstrate that dynamic capabilities—such as cultivating strategic awareness, adopting focus areas, building coalitions, transforming teams, and embedding experimentation—are deeply influenced by the structural and organisational environments within which they operate. For instance, Barcelona's use of legislative provisions to embed data sovereignty and Freetown's fiscal modernisation efforts highlight how structural capacities can enable or constrain transformative change. Organisational routines, such as Seattle's One Data Strategy and Bogotá's Public Innovation Lab, serve as the operational backbone for deploying these capabilities.

Proposition 2: Dynamic capabilities drive evolution within organisational routines and structural capacities. Dynamic capabilities act as catalysts for organisational change, shaping and reshaping routines to align with evolving priorities. For example, Bogotá's transformation of procurement mechanisms and Freetown's participatory budgeting system illustrate how targeted interventions in organisational routines can gradually lead to structural shifts. These cases demonstrate that the iterative adaptation of routines—guided by dynamic capabilities—is essential for addressing complex urban challenges.

Proposition 3: Specific dynamic capabilities interact with and transform specific organisational routines. The case studies reveal distinct patterns of interaction between dynamic capabilities and organisational routines. For instance, Barcelona's embedding of experimentation into its housing and data policies showcases how this capability can reorient departmental routines toward long-term innovation. Similarly, Seattle's coalition-building efforts, which involve partnerships with academic institutions and private entities, underscore the importance of leveraging external expertise to reinforce internal capacities. While the propositions were validated across the four cities, several challenges remain. The fragmentation of capabilities within city departments, resource constraints, and political cycles often disrupt the continuity of transformative initiatives. Addressing these challenges requires an integrated approach to building and sustaining dynamic capabilities by investing human and financial resources.

Future research should focus on longitudinal studies to track the evolution of dynamic capabilities and their long-term impact. Comparative analyses across different governance contexts can further elucidate how structural capacities shape dynamic capabilities.

Our study provides a robust framework for understanding and advancing transformative urban governance. The experiences of Barcelona, Bogotá, Freetown, and Seattle demonstrate that dynamic capabilities, when aligned with structural capacities and organisational routines, can drive meaningful and lasting change. Policymakers and practitioners can leverage these insights to build adaptive, resilient city governments capable of navigating the complexities of the 21st century.

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