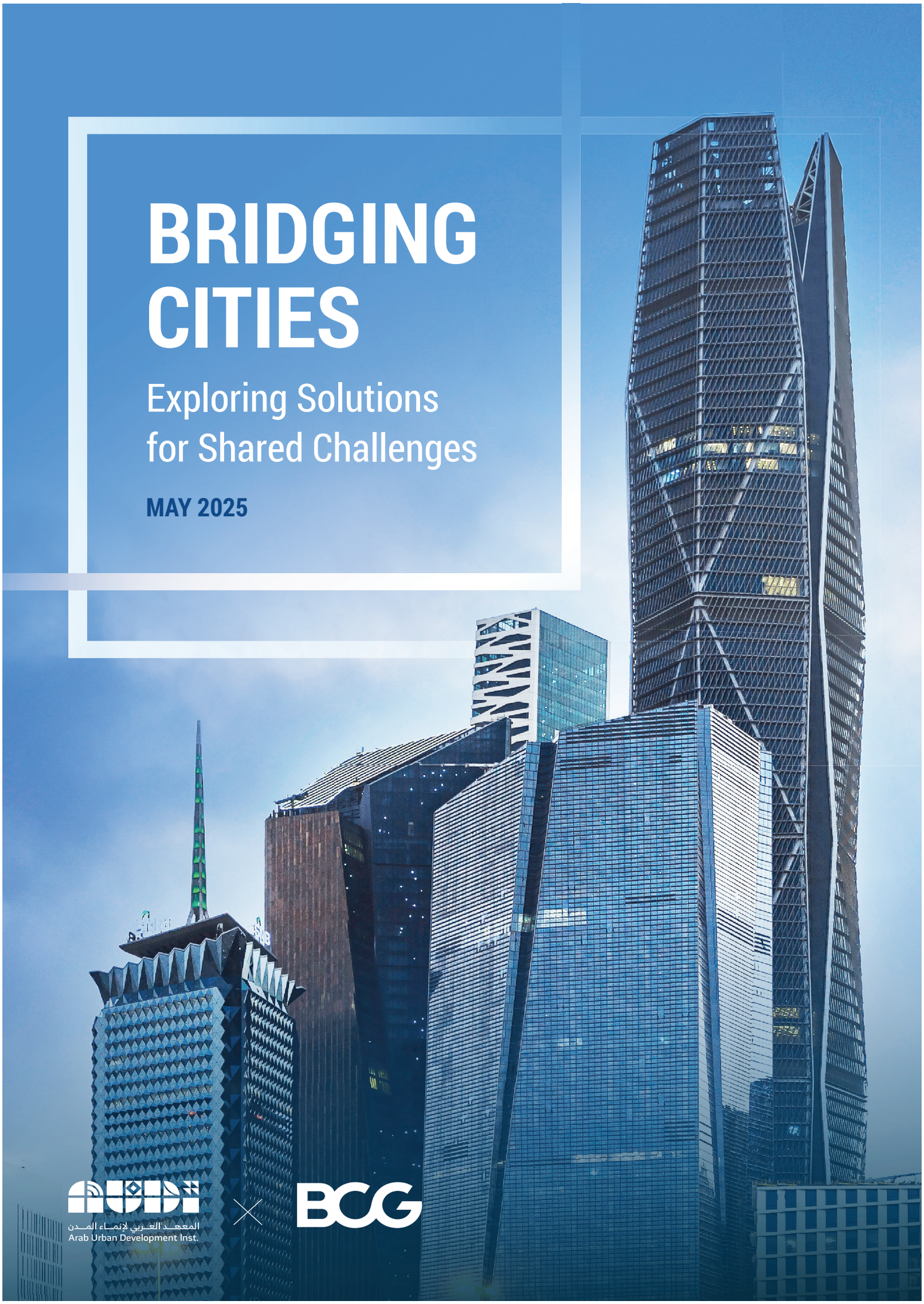
BRIDGING CITIES

Exploring Solutions for Shared Challenges

MAY 2025



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FOREWORD

H.H. Prince Dr. Faisal Bin Abdulaziz Bin Ayyaf,
Mayor of Riyadh Region, President of the Arab Urban Development Institute (AUDI)

Cities are at the heart of today's global economic system, undergoing rapid urbanization and facing increasingly complex challenges that demand timely and innovative responses. The accelerating pace of urban transformation underscores the need for proactive approaches to address modern-day issues, particularly in the areas of climate change, local economic development, and digitalization.

These challenges are not confined to any one region; they are shared by cities around the world. As such, the responsibility of municipalities and local authorities is growing, especially in delivering urban services and maintaining a high quality of life.

In this context, city-to-city cooperation has emerged as a powerful tool for developing practical solutions to urban problems. The Arab European Cities Dialogue (AECD) was established to strengthen connections between city leaders, communities, and institutions through constructive dialogue. This platform embraces diverse values and cultures while fostering collaboration on pressing urban, economic, social, and environmental issues.

This report offers insights into three critical areas: climate change, municipal finance, and digital transformation. It explores how inter-city cooperation has supported local interventions and highlights examples from Arab and European cities across the Mediterranean that have collaborated to create lasting impact.

Ultimately, we aim to spark dialogue, encourage mutual learning, and promote partnerships among cities. We invite all participants in the AECD to use this platform to deepen their partnerships and collaborate on shared priorities. With the continued support of the Arab Urban Development Institute (AUDI), the AECD aspires to grow into a lasting initiative and play a vital role in shaping the future of our connected urban network.

MESSAGE FROM DIRECTOR GENERAL, ARAB URBAN DEVELOPMENT INSTITUTE

Dr. Anas Almughairy
Director General, Arab Urban Development Institute

The Arab Urban Development Institute (AUDI) is a pioneering regional institution that focuses on urban policy issues and municipal development for over 650 cities in the Arab region. We facilitate cities through advanced policy research, institutional capacity development, leadership building, and regional and international networking activities.

This report, produced in collaboration with the Boston Consulting Group (BCG), serves as an integral publication for our flagship event, the Arab European Cities Dialogue (AECD), held in Riyadh from May 11–13, 2025. The dialogue aims to create a space for cooperation, collaboration, and networking between representatives of Arab and European cities and will be organized over a period of 10 years, alternating between cities from each region.

Aligned with AECD's theme, this report provides in-depth insights into the challenges cities face today and explores the potential of city-to-city cooperation efforts in helping cities address them. Although urban challenges are vast and multifaceted, three key areas emerge in Arab and European cities: climate and sustainability, digital transformation, and municipal finance. Each plays a crucial role in the management and implementation of development initiatives within cities.

The report details the primary challenges and impacts associated with each of the three areas and presents emerging trends and best practices observed in cities. By highlighting case studies, it examines successful strategies and initiatives implemented to address common urban issues. Moreover, it draws on valuable insights from urban experts and city leaders from across both regions. Following extensive analysis, the report proposes high-level recommendations along with their respective suggested actions.

The complexity of challenges faced by cities indicates that, more often than not, solutions cannot be realized in isolation. This is where city-to-city cooperation becomes vital, positioning this report as a practical guide offering cities a range of engagement models they can adopt for urban collaboration.

We hope this report serves as a valuable resource on urban development challenges and the potential of municipal collaboration, strengthening our collective efforts towards encouraging cooperation between cities beyond geographical borders.

MESSAGE FROM BCG

Philippe Cornette de St Cyr
Managing Director and Senior Partner, Head of BCG KSA, Global Head of Cities, Real Estate and Tourism sector

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The coming decade will redefine how cities plan, finance, and deliver for their residents. The convergence of climate risk, technological disruption, and rising urban inequality is creating both unprecedented pressure and unparalleled opportunity. Cities are now central to every major global agenda—from net-zero commitments and digital governance to economic resilience and inclusive growth.

At Boston Consulting Group (BCG), we see firsthand how the nature of urban leadership is shifting. Cities are being asked to act more strategically, mobilize capital more effectively, and deliver solutions faster—often with fewer resources and rising public expectations. Across countries, cities are reimagining not just what they deliver, but how they operate: building new governance frameworks, tapping into global collaboration platforms, and testing bold, locally grounded innovations.

This report, developed in partnership with the Arab Urban Development Institute (AUDI), is both timely and necessary. It offers a clear lens into how cities in Europe and the Arab region are confronting shared challenges across three foundational pillars: climate, digital transformation, and municipal finance. It draws from city-level insights, practitioner interviews, and BCG's deep experience to surface replicable models, actionable recommendations, and practical case studies. Perhaps most importantly, it shows that progress is not only possible—it is already happening, and often being accelerated through city-to-city cooperation. From peer learning and shared investment platforms to technical exchanges and regional networks, cities are increasingly looking to one another as trusted partners in scaling solutions that work.

Urban transformation is no longer the work of isolated programs. It is a system-wide effort that requires coordination, trust, and ambition. We hope this report equips leaders across sectors with the perspective and tools to move from ambition to action—and to help cities everywhere deliver a better, more resilient future.

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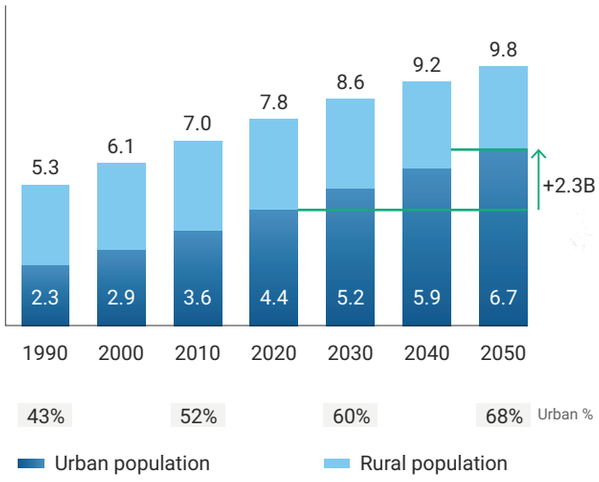
01 INTRODUCTION

1. Cities at the Heart of Global Development

Over the coming decades, cities will be the primary stage on which the most critical developments in the global economy, society, and environment unfold. Urban areas already generate more than 80% of global Gross Domestic Product (GDP)—a figure projected to exceed 90% by 2050. Cities are not only economic powerhouses; they are also demographic giants and emerging political actors with a growing influence on global agendas.

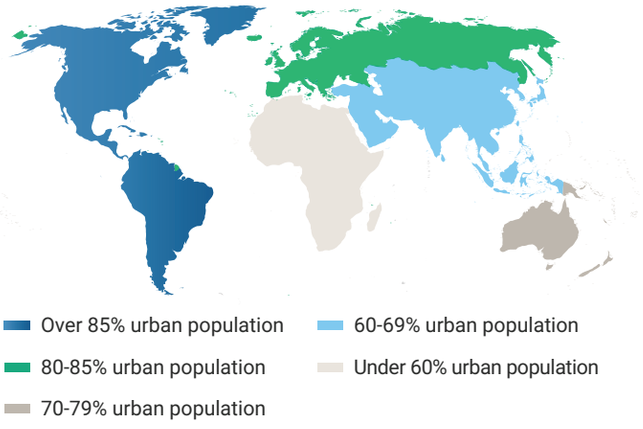
Exhibit 01: By 2050 cities will accommodate ~68% of the global population and more than 90% of economic activities

Global population (Billion)



Cities currently produce ~85% of global GDP, the number is expected to be >90% in 2050[1]

Share urban population in 2050



1 in 5 people will live in a megacity[2] in 2050

1. Projected using UN 2018 data 2. City over population of 10 million
Source: The United Nations (2018)

Urbanization is accelerating at an unprecedented pace. In 1990, only 43% of the world's population lived in cities; today, that number stands at 56%, and is projected to reach nearly 68% by 2050—an increase of 2.3 billion urban residents in just 25 years. At the same time, the shape and structure of urbanization are evolving, with cities becoming larger and more complex. The number of megacities—urban areas with over 10 million citizens—is expected to increase from 33 in 2018 to 43 by 2030.

Yet this rapid growth brings urgent challenges. As cities expand, so do their demands for resources, infrastructure, and services, alongside their vulnerability to environmental and social stressors. The concentration of economic activity within a

limited number of hyper-connected hubs makes resilience, equity, and long-term planning more critical than ever.

In addition to their economic and demographic weight, cities are also gaining political prominence. In fact, more than 75% of citizens in the Organization for Economic Co-operation and Development (OECD) countries report higher trust in local authorities than in national governments. This trust is enabling cities to lead on complex agendas, from climate action to digital governance.

No longer just administrative units, cities are now stepping up as political actors in their own right. They are driving policy innovation on climate, digital infrastructure, and inclusive development. They are also forging global alliances, setting international standards, and piloting new governance models. From mobility and housing to data and resilience, today's cities are not reactive entities—they are proactive, strategic engines of global development.

2. Six Interlinked Paradigm Shifts Reshaping the Urban Landscape

Cities today face a dual role: they are engines of global growth and epicenters of rising complexity. The urban landscape is being transformed by a series of powerful, interconnected trends that go far beyond population growth and economic expansion:

- Urbanization and Migration
- New Urban Mobility
- Resident Centricity
- Sustainability and Resilience
- Digitization
- Economic Growth and Innovation
- City-to-City Cooperation

As these six forces converge, entirely new urban forms are taking shape. Cities are evolving into networked systems where digital and physical infrastructure co-exist. The rise of polycentric urban zones, distributed services, platform governance, and AI-driven planning will define the next phase of urban transformation.

Cities that understand and respond to these trends, with innovation, collaboration, and bold leadership, will be best positioned to thrive in the decades ahead. Those who ignore them risk being left behind.

2.1 Urbanization and Migration: Navigating Growth Without Losing Livability

Urbanization has long been associated with economic opportunity and development, but today, it brings an increasingly complex set of risks. Uncontrolled expansion has led many cities into a cycle of sprawl, infrastructure strain, environmental degradation, and social inequality. Across both Arab and European cities, the consequences of unmanaged growth are becoming clearly visible.

In the Arab world, Dubai's built-up urban area expanded by over 550% between 2000 and 2015, forcing costly extensions of roads, utilities, and public services to low-density, car-dependent zones. Cairo's expansion into fertile agricultural land threatens food security and intensifies the urban heat island effect. Meanwhile, Riyadh's horizontal growth has led to car dependence, with 92% of trips made by private vehicles, leading to chronic congestion and a 55% increase in commuting time compared to free-flow conditions.

These patterns reflect broader global trends. In Europe, Madrid experienced a 50% increase in urbanized land between 2000 and 2010, driven by speculative housing overproduction. The resulting mismatch between housing location and real demand contributed to economic instability during the 2008 financial crisis.

Urbanization also amplifies inequality. Rapid growth often leads to uneven infrastructure and service provision, resulting in long commutes, poor air quality, and lower property values in underserved districts. Without targeted intervention, the economic and environmental costs of sprawl will continue to rise.

2.1.1 A Shift in Response: Smarter Spatial Strategies

In response to these pressures, cities are adopting new strategies to manage growth sustainably. These approaches include:

- Reforming zoning laws to enable higher-density and mixed-use development.
- Revitalizing underused urban districts through large-scale redevelopment programs.
- Developing affordable housing integrated with employment hubs and community amenities.
- Introducing population caps and development boundaries to contain urban sprawl.
- Enhancing transport infrastructure to connect the agglomerations and support new work patterns.
- Investing in livability through green spaces, a walkable environment, and accessible services.

2.1.2 Virtual Mobility and the Rise of the Metacity

A parallel shift in urban form is being shaped by the rise of remote work and virtual mobility. Accelerated by the COVID-19 pandemic, this transition is likely to endure: 90% of workers globally express a preference for some form of remote work, and over half of surveyed professionals are open to working remotely for a foreign employer.

This growing separation between where people live and where they work is giving rise to new urban dynamics. Residents are increasingly prioritizing quality of life, affordability, and accessibility over proximity to the office. As a result, cities are evolving as part of larger regional and even transnational systems.

The concept of Metacity captures this evolution. A Metacity is a polycentric, digitally integrated urban system in which economic activity, governance, and social life are distributed across multiple nodes—some physically connected, others linked virtually. The London Metacity, for example, includes traditional urban centers like Leeds and Cambridge, but also global partners such as Dubai and Hong Kong, connected through trade flows, digital platforms, and professional ecosystems.

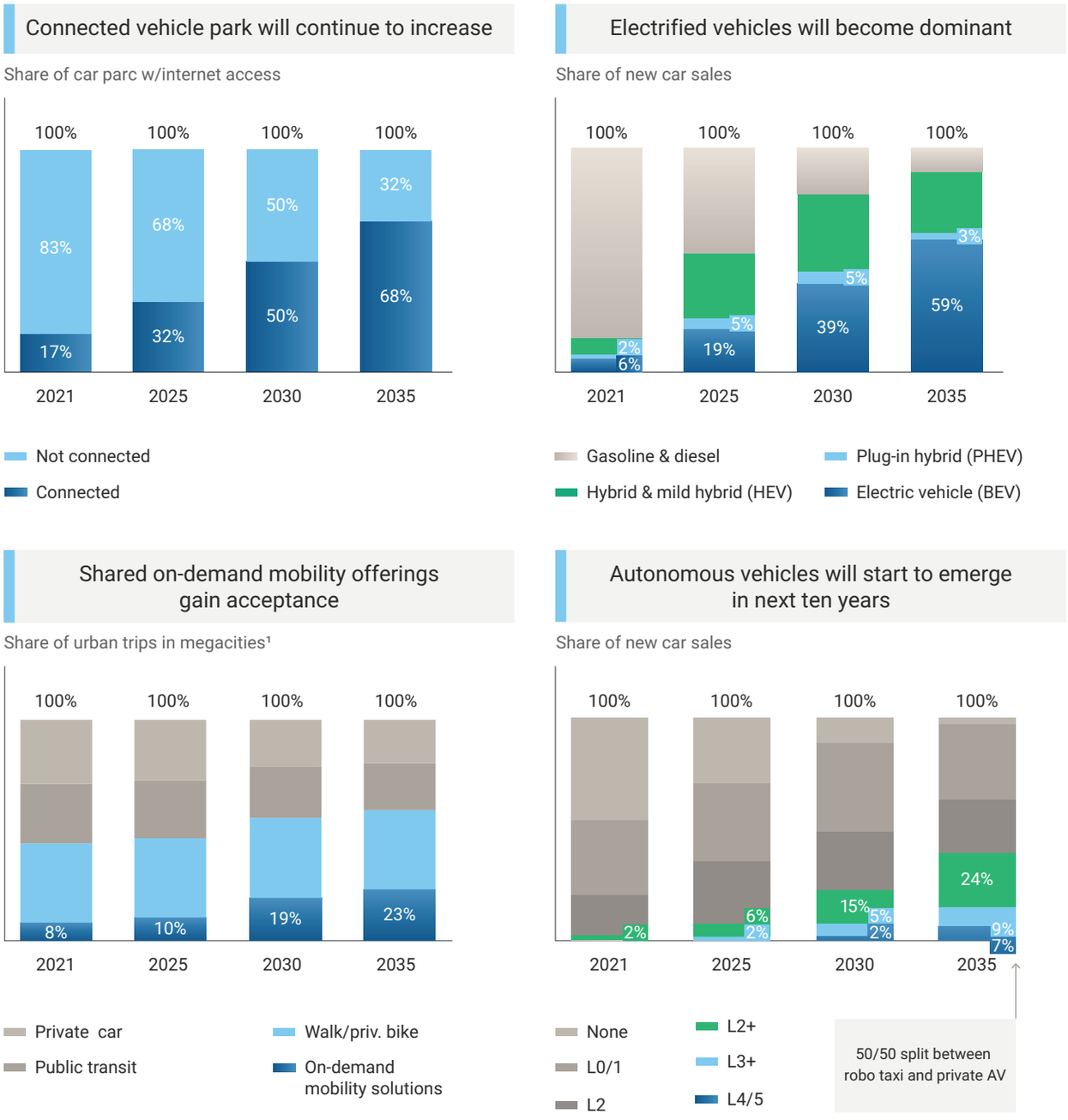
2.2 New Urban Mobility: Reimagining How Cities Move

Mobility systems around the world are undergoing profound disruption. While private vehicles have long dominated city transport, growing congestion, climate targets, and shifting lifestyle preferences are pushing cities to rethink how people and goods move through urban space. The traditional mobility model—anchored in fossil fuel usage, central business districts, and personal car ownership, is proving both environmentally and economically unsustainable.

Globally, the number of vehicles is projected to double by 2040, fueled not only by urbanization and rising incomes but also by legacy transport systems that continue to prioritize road infrastructure over integrated, sustainable solutions. As cities densify, the need for more agile, low-emission, and flexible transport systems is becoming urgent.

At the same time, technological innovation and changing mobility preferences are ushering in a new era—one that prioritizes access over ownership and convenience over congestion. Across leading cities worldwide, four major trends are emerging as cornerstones of the urban mobility shift, as illustrated in exhibit 02.

Exhibit 02: Four main trends driving disruptive mobility changes



1. Based on blended future modal mix of: New York, Los Angeles, Paris, London, Moscow, Shanghai, Beijing, Chongquin, Guangzhou, Tianjin, Shenzhen, Tokyo, Osaka
Source: IHS, Statista, BCG market model, BCG analysis

2.2.1 Four Likely Future Mobility Scenarios

As these trends converge, cities are expected to evolve toward one of four likely mobility futures, each shaped by different technological adoption levels, user behaviors, and planning priorities. Based on the convergence of these trends, cities are expected to fall into one of four likely mobility futures:

- **Shift from Private Cars to Non-autonomous Modes:** Cities restrict the use of private vehicles in urban centers and encourage green modes; Autonomous vehicles (AVs) are still in their infancy.
- **Dominance of Micro-mobility:** Cities promote the use of micro-mobility options such as e-scooters, bikes, e-micro-buses, e-bikes and other green shared modes.
- **Strong Push for Robo Shuttles:** Cities promote larger semi-flexible robo shuttles (up to 15 passengers), a hybrid between mass transit and personal transport modes.
- **Strong Uptake of Robo Pods:** Cities promote small, flexible robo pods (up to two passengers) that provide on-demand travel while accounting for individual preferences.

Each scenario requires a different approach to infrastructure, regulation, investment, and data governance, and most cities may combine elements of all four-over time.

2.3 Resident Centricity: Designing Cities Around People

Historically, cities were planned around infrastructure, vehicles, and centralized business activity. Today, the paradigm is shifting. Cities are now evaluated not only by how efficiently they function, but by how effectively they serve the everyday needs and lived experiences of their residents. In a rapidly changing urban environment, resident satisfaction is emerging as both a benchmark of success and a prerequisite for sustainable growth.

Resident centricity is no longer a peripheral concern—it has become a strategic imperative. Cities now compete for talent, investment, and trust, all of which are shaped by the quality of life they offer. With rising population density, growing diversity, and more complex service expectations, the pressure is mounting for cities to deliver services that are accessible, inclusive, and responsive to residents' needs.

2.3.1 Why Resident Satisfaction Matters

BCG's Advocacy Index from its Cities of Choice report measures overall resident satisfaction through five key indicators: current satisfaction, likelihood to recommend the city, recent advocacy behavior, long-term livability expectations, and belief in the city's future. The index reveals a strong correlation between resident satisfaction and broader urban success.

Exhibit 03: Resident satisfaction correlates with economic and social resilience

High satisfaction with the city encourages residents to choose life strategies that make the city more resilient

Advocacy Index is BCG's measure of satisfaction with the city
It measures satisfaction with the city based on five questions

Are you satisfied to live in [City]?
How likely are you to recommend [City] to a friend from another city as a place to live and work?
Have you recommended or criticized [City] as a place to live and work in the last 12 months?
Do you see your children living in [City] 20 years from now?
Do you believe [City] will prosper in the future?

Cities with higher advocacy scores consistently attract greater inflows of talent, support higher levels of entrepreneurial activity, and build stronger trust in local institutions. Even fertility rates tend to be higher where residents express confidence in the city's future.

These findings reinforce that resident happiness is not merely a moral or social aspiration—it is a predictor of demographic and economic resilience.

2.3.2 From Infrastructure-Centered to Human-Centered Design

To meet these evolving expectations, cities are adopting a "resident journey" approach to governance—viewing individuals not as users of isolated services, but as people interacting with urban systems throughout their day. This shift requires rethinking how services are designed, delivered, and measured. It also demands new methods of resident engagement, real-time feedback mechanisms, and inclusive participation in decision-making.

One of the most prominent responses to resident-centric planning is the 15-minute city. Popularized by Paris and embraced by cities such as Melbourne, Portland, Riyadh, Amman, and Dubai, the model aims to ensure that essential services—workspaces, schools, shops, green areas, and healthcare—are all within a 15 to 20-minute walk or bike ride from residents' homes.

Paris, France: Pioneering the 15-minute City Model

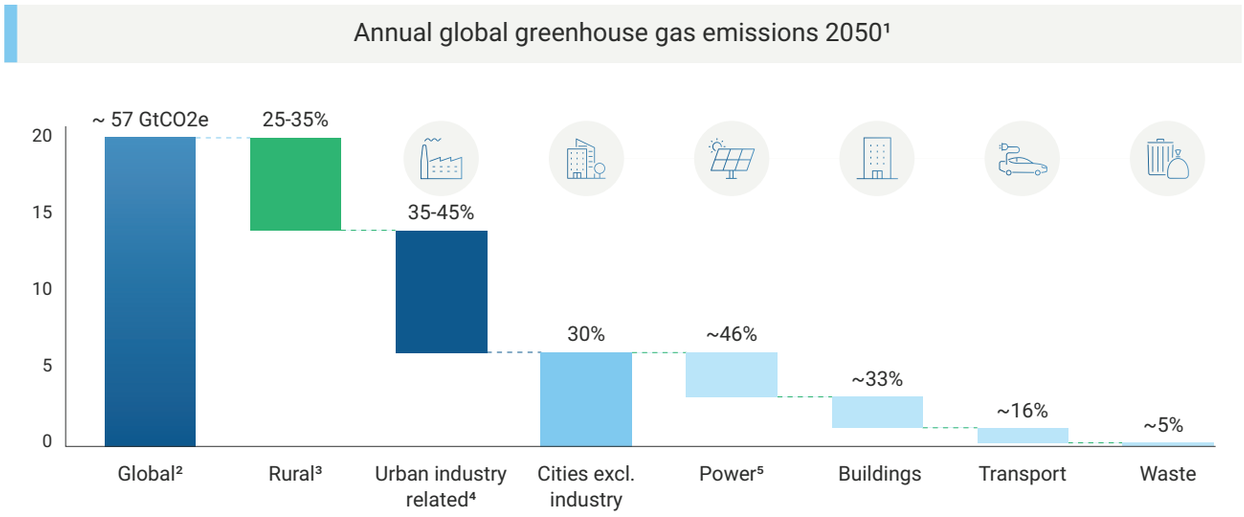
Paris has become a global leader in implementing this approach. The city removed over 60,000 parking spaces, added 600 miles of bike lanes, opened schoolyards for community use, and restructured public budgets to increase resident input in planning decisions. Between 2001 and 2019, car ownership declined from 60% to 35% of households.

2.4 Sustainability and Resilience: Cities on the Climate Frontline

Climate change is reshaping the urban environment. As urbanization accelerates, cities are becoming hotter and more exposed to extreme weather events. Globally, urban areas are warming faster than their rural surroundings. In cities such as Riyadh and Madrid, average annual temperatures have risen between 1–3°C over the past century. These changes are not abstract—they translate into more frequent heatwaves, chronic water stress, increased flood risk, and mounting energy demand.

Yet cities are not only at risk—they are also uniquely positioned to lead climate action. Urban areas currently account for 35–70% of global greenhouse gas abatement potential, depending on the level of urban industry, transport emissions, and building energy use. They concentrate on both the problems and the means to address them.

Exhibit 04: Urban areas hold 30-75% of greenhouse gas abatement potential, depending on industry



1. Assumed scenario: current policies, but no additional climate action 2. Paris pledges 3. E.g., non-urban power generation, land use, agriculture 4. Urban industry incl. associated power generation 5. Abatement potential from decarbonizing electricity supply of buildings, transport, and waste in cities incl. carbon capture
Source: World Economic Forum, IEA, Climate Action Tracker, C40

This places city leaders at the center of climate strategy. Their decisions—on transport, land use, buildings, waste, and energy—will determine whether the global trajectory stays within a manageable threshold or crosses into irreversible tipping points.

2.4.1 The Net Zero Carbon Strategy: An Integrated Urban Response

To address these challenges, cities are adopting an integrated Net Zero Carbon strategy. Unlike traditional climate plans, which often focus on single sectors, this framework addresses the full spectrum of urban emissions and challenges in one coherent approach. It rests on six mutually reinforcing pillars:

- **Clean Electrification:** Cities are transitioning toward electricity generated from zero-carbon sources. Copenhagen, for instance, now derives 20% of its electricity from wind power. Smart grids and distributed energy systems are further enabling resilience and decarbonization.
- **Efficient and Connected Buildings:** Buildings are among the largest sources of emissions in cities. Retrofitting older structures and designing new, ultra-efficient buildings with smart systems can significantly reduce energy consumption.
- **Clean Mobility and Compact Urban Form:** Transport is another major urban emitter. Shenzhen has electrified nearly all taxis and buses, while other cities are transitioning to transit-oriented development and cycling infrastructure to reduce demand for car travel.
- **Circular Waste and Resource Management:** A circular economy model, focused on reducing, reusing, and recycling materials, is helping cities curb emissions and waste. Austin's "Second Life" program has diverted over 400 tons of reusable materials from landfills each year.
- **Climate Budgeting and Green Finance:** Cities are leveraging green bonds, carbon pricing, and performance-based subsidies to fund low-carbon upgrades. Adelaide's Solar Savers initiative, for instance, provided municipal funding for solar installations in low-income housing.
- **Resident Engagement and Behavioral Nudging:** Cities cannot meet climate goals without public buy-in. Milan increased its recycling rate to 50% through targeted behavior campaigns. Awareness programs, participatory design, and digital nudges are emerging as critical levers in reducing high-emission habits at the household level.

2.4.2 A Call for Context-specific Adaptation

One of the key lessons from city-led climate efforts is that climate resilience cannot be solved with one-size-fits-all solutions. Heat mitigation strategies suitable for Riyadh differ from those required in Madrid or Nairobi. In Rotterdam, adaptation focuses on flood management; in Amman or Tunis, the focus is drought resilience.

Effective climate planning is recommended to consider geography, socio-economic realities, and institutional capacity. Many cities are now using microclimate modeling, real-time risk data, and community engagement to design context-appropriate solutions that adapt to their local vulnerabilities.

2.5 Digitization: Unlocking the Next Generation of Urban Intelligence

Digital transformation has become a cornerstone of modern city governance. From smart grids and sensor networks to integrated service platforms and real-time data dashboards, digital tools are now essential to how cities manage resources, deliver services, and engage with residents. However, many cities still rely on legacy infrastructure, fragmented digital systems, and disconnected data silos. As cities scale in complexity and ambition, digitization can evolve from isolated technology projects into a strategic enabler of holistic urban transformation.

2.5.1 Evolution of Smart Cities: Toward AI-Driven, Adaptive Urban Systems

The concept of the smart city has evolved significantly. Initial efforts focused on automating specific functions, such as installing smart meters or upgrading streetlights. During the 2020s, cities advanced toward more integrated digital platforms, unifying services under single-entry portals and enabling more responsive operations. Today, leading cities are entering the next phase: the cognitive city. These urban environments use artificial intelligence (AI) and real-time data to adapt dynamically to resident needs, anticipate risks, and optimize service delivery. This shift marks a transformation from reactive to predictive governance.

Generative AI (GenAI) is accelerating this transformation. From optimizing transit schedules to simulating climate risks or guiding zoning decisions, GenAI tools are beginning to shape how city planners, engineers, and administrators make decisions. Their potential lies in the ability to process vast datasets and generate tailored insights at unprecedented speed, creating more agile, resident-centric cities.

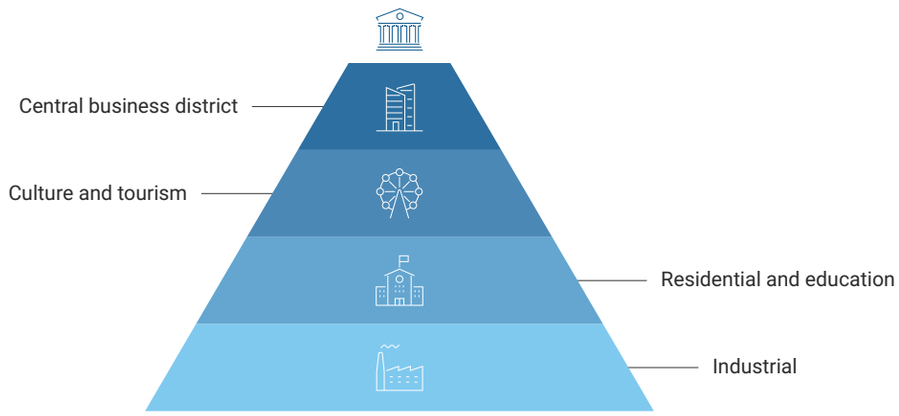
To fully realize this potential, cities can evolve into orchestrators of complex, interdependent systems. This means integrating public agencies, private firms, residents and civil society, academic and research institutions, and digital service providers within a connected digital framework—what is increasingly referred to as an “ecosystem of ecosystems” (see Exhibit 05)

This model enables cities to integrate data, infrastructure, and governance across domains. It breaks down traditional silos and fosters co-creation among diverse actors. Cities like Abu Dhabi, Seoul, and Tallinn are leading the way—implementing unified digital IDs, interoperable platforms, and common data standards to enable seamless citizen experiences. These systems not only improve service quality but also generate cost savings, trust, and innovation capacity.

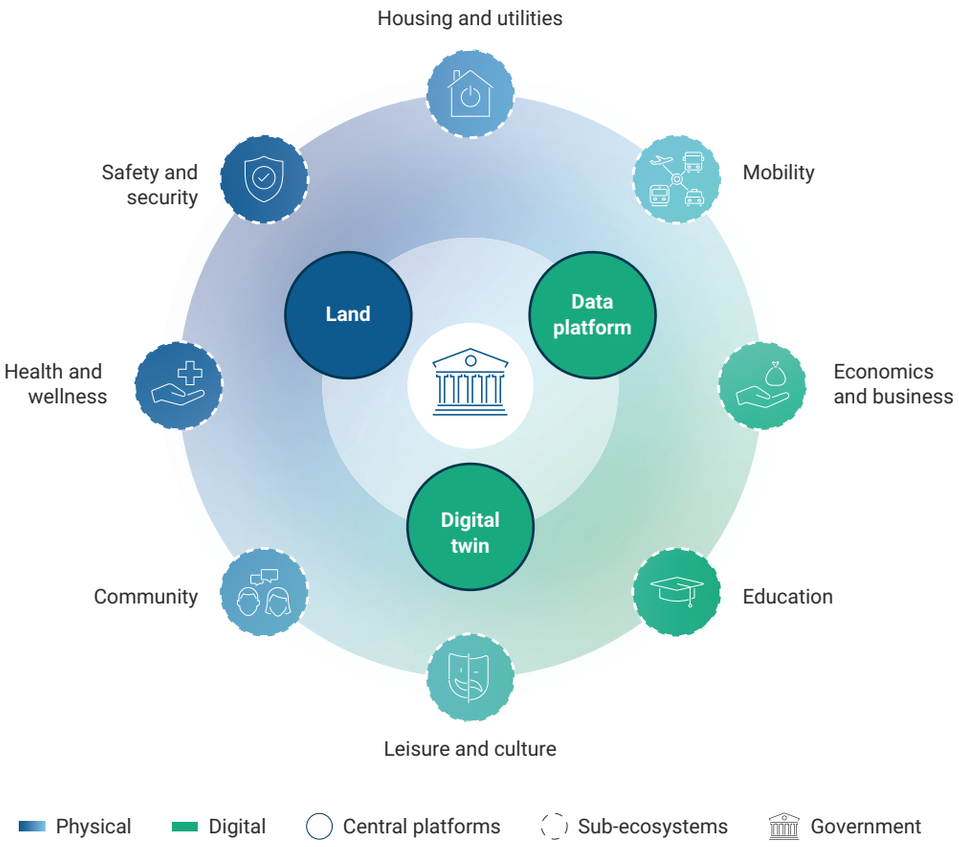
Exhibit 05: Through digital platforms, cities shift from top-down spatial planning to orchestrating dynamic ecosystems

Top-down master planning to create spatial order by organizing sectors into different urban areas

Illustrative



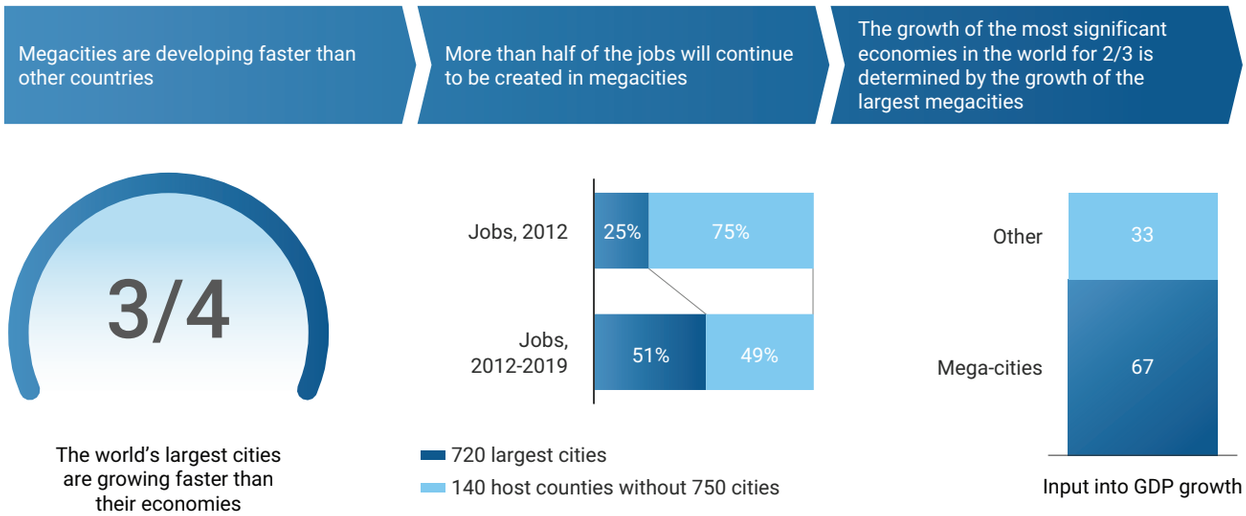
Shaping rules and structures to enable coordination across sub-ecosystems that satisfy resident needs



2.6 Economic Growth and Innovation: Enabling Productivity Through Urban Form

Cities are the primary engines of national and global economic growth. Today, they generate over 80% of global GDP, with projections indicating they will account for 90% of global economic activity by 2030. Megacities are at the center of this shift, contributing more than half of new job creation and driving two-thirds of economic growth in major economies.

Exhibit 06: Megacities drive global growth, job creation, and economic output



1. 750 cities with a population of more than 450 thousand people, '08-18 years
Source: OECD

This outsized contribution stems from the unique clustering effects that cities offer access to talent, infrastructure, markets, and innovation networks—all within concentrated, interconnected environments. However, as global economic structures evolve—with the rise of automation, remote work, and digital platforms—cities can adapt both spatially and structurally to retain their competitive edge.

In many regions, the geography of economic activity is no longer aligned with how cities are built. Outdated zoning, fragmented infrastructure, and disconnected real estate markets can restrict the emergence of high-productivity sectors. Without intervention, cities risk declining productivity, deepening spatial inequality, and missed opportunities to attract next-generation industries.

2.6.1 Spatial and Infrastructure Development as Economic Strategy

Cities that are adapting successfully are aligning spatial planning with economic development strategies. Three levers are particularly effective:

- **Future-ready Infrastructure**

  Cities are investing in infrastructure that supports emerging sectors—sometimes referred to as "Economy 4.0." This includes digital and logistics infrastructure that supports autonomous mobility, drone delivery zones, high-speed connectivity, and flexible commercial spaces for innovation. Cities like Singapore and Dubai are at the forefront, positioning themselves as innovation hubs for emerging sectors.

- **Innovation Clusters and Labor Market Integration**

  Urban planning is being used to foster innovation clusters and labor market integration. Polycentric development and mixed-use zoning allow cities to create self-contained innovation hubs that reduce commute times, enable cross-sector collaboration, and improve livability, making cities more attractive to talent.

- **Asset Optimization and Adaptive Reuse**

  Cities are rethinking how they manage real estate and assets. By repurposing underutilized commercial areas, revitalizing legacy industrial zones, and upgrading ageing infrastructure, they are unlocking new value from existing urban assets and aligning development with economic demand.

As the global economy continues to evolve, the success of cities will hinge on their ability to align economic strategy with spatial and infrastructure planning, making urban form not merely a backdrop to growth but a catalyst for it.

2.7 City-to-City (C2C) Cooperation: A Cross-Cutting Enabler

The six trends shaping cities are deeply interconnected—and increasingly beyond the capacity of any single city to address in isolation. C2C cooperation is emerging as a strategic enabler that allows municipalities to share knowledge, share tested solutions, and accelerate innovations more efficiently.

Examples of cross-city collaboration can be found across all major urban transformation domains:

- Urban planning partnerships
- Joint development of smart city frameworks
- Climate action networks
- Cross-border digital toolkits and AI governance
- Peer-to-peer knowledge sharing on service delivery and inclusion

By learning from one another, cities can reduce redundant experimentation, accelerate adoption of best practices, and leapfrog toward more effective, inclusive, and scalable outcomes.

3. Framework, Methodology, and Structure of the Report

This report highlights the growing prominence of cities in the 21st century and offers practical insights into how they can navigate the structural shifts shaping the future of cities. Given the breadth of transformations underway, this report focuses on three of the most pressing and interdependent challenges faced by cities today:

- Climate and Sustainability
- Digital Transformation
- Municipal Finance

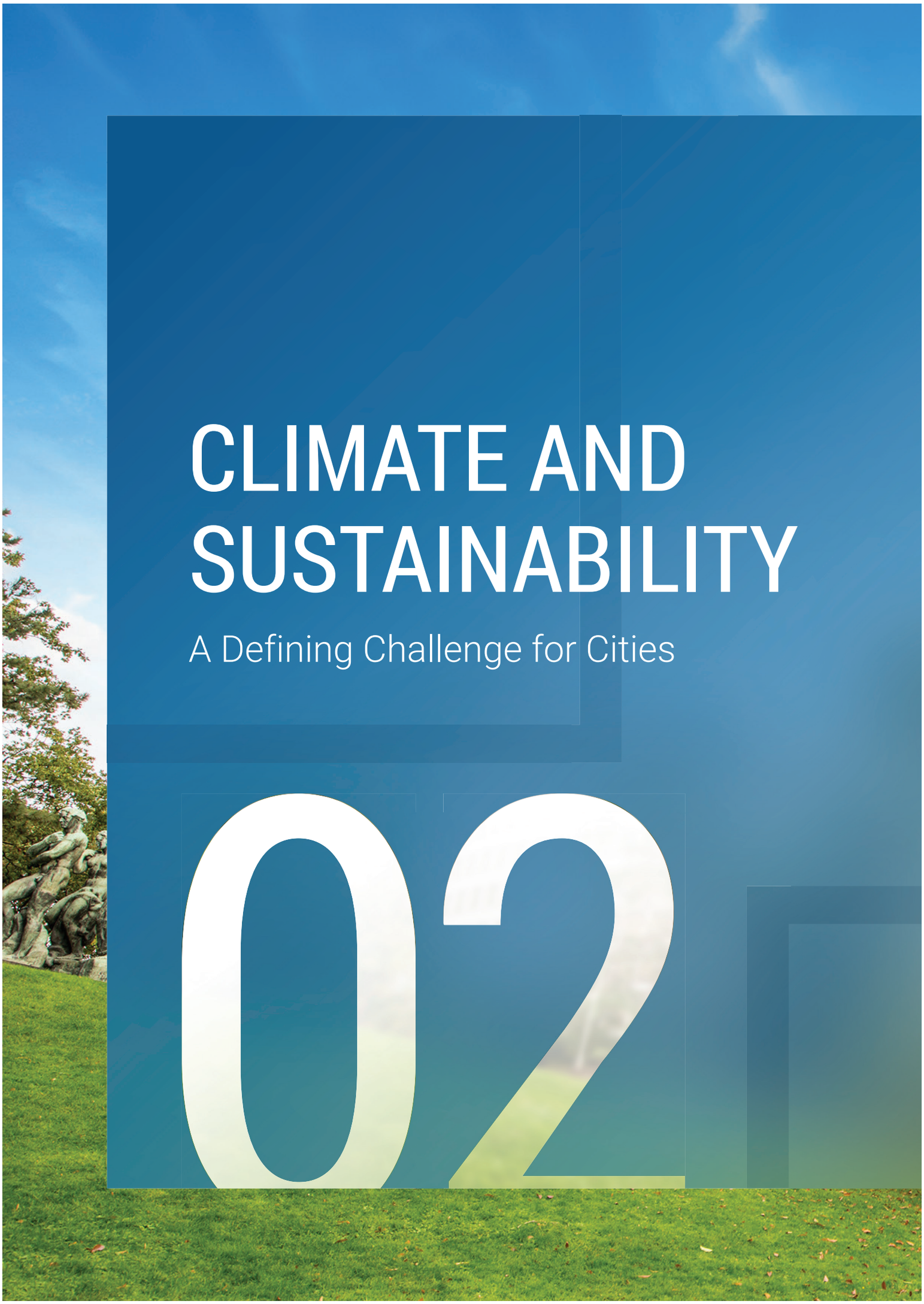
These areas were selected not only for their individual significance but for their deep interdependencies. Cities cannot drive sustainability without access to finance; they cannot scale digital tools without institutional capacity; and they cannot secure long-term investment without aligned governance, budgets, and citizen trust.

> “Finance, digital transformation, and climate resilience represent interconnected strategic priorities that receive coordinated political and administrative attention. These three areas function as an integrated system where progress in each domain reinforces the others.”
>
> **- Eng. Mohammad Omar Aba AlKhail, Advisor to H.H. the Mayor of Riyadh, General Supervisor of International Cooperation in Riyadh Region Municipality**

In addition, the report explores C2C cooperation as a strategic enabler across all three topics. Peer-to-peer collaboration is emerging as one of the most effective mechanisms for cities to accelerate learning, avoid duplication of effort, and implement scalable solutions tailored to local context.

This report provides a practical, forward-looking examination of these challenges facing Arab and European cities today. It is intended for urban decision-makers, city managers, and policy practitioners seeking to design and implement more sustainable, resilient, and digitally enabled urban systems. Drawing on original survey data, expert interviews, and case studies from both regions, the report highlights tested approaches to climate adaptation, digital transformation, and municipal finance reform. Its goal is to equip cities with actionable insights, showcase replicable practices, and promote peer learning through C2C cooperation across diverse urban contexts.

The analysis in this report is grounded in findings from the Cities Survey 2025, which gathered insights from 41 city leaders and urban practitioners across Europe and the Arab region. Each chapter builds on this primary research, complemented by more than 20 expert interviews conducted jointly by BCG and AUDI, along with global case studies, BCG's proprietary Cities of Choice report, and extensive secondary research. Together, these inputs form the foundation for the analysis, frameworks, and recommendations presented throughout the report.



CLIMATE AND SUSTAINABILITY

A Defining Challenge for Cities

02

02 Climate and Sustainability: A Defining Challenge for Cities

The increasing severity and frequency of extreme weather events driven by climate change is one of the most urgent and multifaceted challenges facing cities today. Although urban areas only occupy around 4% of the Earth's land surface, they are home to more than half of the global population and account for over 70% of global carbon dioxide (CO_2) emissions[1]. Cities are thus central actors in both contributing to and mitigating rising risks from climate change, and they are increasingly vulnerable to its consequences.

Exhibit 07: Cities across Europe and the Arab region face significant climate risks with increasing losses

Dubai, UAE	Flooding: In 2024 Dubai experienced its heaviest rainfall in 75 years, with insured flood-related losses estimated at approximately USD 3 billion
Riyadh, KSA	Water scarcity & extreme heat might reduce the GDP by >12% by 2050; heat waves expected to increase 4-5 times
Manama, Bahrain	Days per year with temperatures above 35°C to reach ~200 by 2050 (under high-emissions scenario)
Casablanca, Morocco	Drought and temperature rise to adversely impact GDP by >6% by 2050; >30% tourism jobs in danger
London, UK	Heatwaves leading to productivity losses of ~577 mn pounds annually
Rotterdam, Netherlands	Sea-level rise: Expected to rise by +24 cm to +124 cm by 2100
Venice, Italy	Flooding: Incurred a loss of USD 1 bn in 2019 due to flooding of buildings
Athens, Greece	Extreme heat: Inaction can lead to 3x increase in extremely hot days from 10 to 30 in a year by 2050

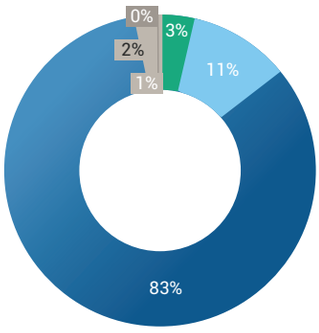
Sources: Press search; BCG Analysis. Arabian Gulf Business Insight, The World Bank, S&P, Atmosphere; Climate Adapt, Business Insider

In recent years, the impacts of climate change have become increasingly visible across cities in Europe and the Middle East and North Africa (MENA). The severity and nature of these effects vary significantly, shaped by geography, levels of socioeconomic development, and institutional capacity. In 2022, Europe experienced record-breaking heat, while parts of the MENA region continued to face prolonged drought and growing water stress. Flash floods, wildfires, and coastal erosion are no longer isolated events; they represent a rising pattern of disruption that directly affects urban infrastructure, public health, and economic resilience.

1. World Economic Forum, Climate emergency: how our cities can inspire change, published January 17, 2020

Exhibit 08: Climate risks like heatwaves, storms or floods have severe impacts, causing fatalities and economic losses

Fatalities by event in 2022



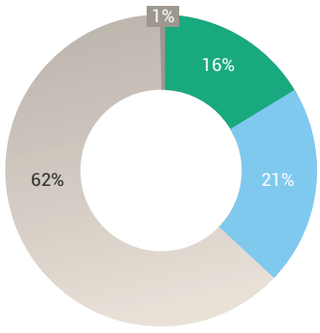
74.5K fatalities 2022

Data expressed in

Drought	2.6K
Flood	8.0K
Heatwave	61.8K
Storms	1.6K
Wildfires	76
Others*	418

*cold wave, severe winter conditions, mass, movement, glacier lake outburst flood

Economic loss by event in 2022



221B economic losses 2022

Data expressed in

Drought	35.6B
Flood	46.7B
Heatwave[1]	0
Storms	137.4b
Wildfires	1.1B

[1]No data available for economic losses related to heatwaves

Sources: Germanwatch; BCG Analysis

While many European cities have invested early in adaptation measures, including coastal defenses and revised building standards, cities in the Arab region are also advancing quickly, often leapfrogging traditional pathways through digital tools and modern infrastructure. These varied experiences highlight both the urgency of climate adaptation and the growing opportunity for cities to learn from one another and innovate collaboratively.

1. Understanding the Five Most Pressing Climate Risks

Cities today face five primary climate-related risks, each with distinct impacts and often overlapping consequences: heatwaves, flooding and storms, wildfires, water scarcity and drought, and sea-level rise. These risks are deeply interconnected, with cascading effects on health, housing, energy supply, and economic resilience.

The following sections outline each of these climate risks, providing examples of their impact and illustrating how they are affecting different urban regions.

1.1.1 Heatwaves

Heatwaves are among the most acute and immediate risks to urban life. In 2022, Europe recorded its hottest summer in history, with over 61,000 heat-related deaths[2], especially in countries like Italy, Greece, and Spain. In comparison, cities in the Arab region experience even more intense and prolonged periods of extreme heat, with temperatures further exceeding 50 °C. These conditions strain water and energy systems, reduce labor productivity, and increase heat-related medical emergencies, pushing the limits of human adaptability.

2. Nature Medicine, Heat-related mortality in Europe during the summer of 2022, published July 10, 2023

1.1.2 Flooding and Storms

Heavy rainfall events have triggered severe flooding across European cities, notably Germany, Belgium, and Italy, disrupting transport, damaging infrastructure, and endangering lives. In the MENA region, flash floods are becoming more frequent, as seen in Libya in 2023. Globally, from 1993 to 2022, floods and storms affected more than 200,000 people, and floods accounted for 32% of total disaster-related economic losses in that period[3].

1.1.3 Wildfires

The frequency and intensity of wildfires are rising, particularly in peri-urban areas. In 2023 alone, more than 500,000 hectares burned across Europe, the Middle East, and North Africa—over the area of Luxembourg[4]. Fire-prone zones are expanding into areas previously considered low-risk, placing new pressures on housing, air quality, and urban infrastructure. These events frequently lead to mass evacuations, public health emergencies, and widespread service disruptions.

1.1.4 Water Scarcity and Drought

Water scarcity and drought are persistent challenges in many Arab countries and are being worsened by climate change. Fourteen of the world's seventeen most water-stressed nations are located in the MENA region. Rising temperatures are increasing evaporation and reducing freshwater availability, with potentially severe consequences for cities such as Baghdad and Amman, where water rationing is already in effect. The World Bank estimates that climate-induced water shortages could reduce the Gross Domestic Product (GDP) in Arab states by up to 14% by 2050. Although more acute in the Arab region, drought is also emerging as a concern in parts of Europe, for example, during the 2022 crisis that left over 100 French villages without access to drinking water.

1.1.5 Sea-level Rise

Sea-level rise poses a long-term but existential threat, particularly to coastal and delta cities. Egypt's Nile Delta, for example, has seen an annual 3.2 mm sea-level rise since 2012[5], already causing coastal floods, shoreline erosion, and saltwater intrusion into groundwater. Alexandria is one of the areas most affected by this sea-level rise; without adaptation, up to 30% of its land area could be lost by the end of the century, potentially displacing 200,000 jobs and causing $3.5 billion in damages[6]. Cities like Rotterdam and Venice are responding with large-scale investments in flood defenses.

3. Germanwatch, Climate Risk Index 2025, published February 12, 2025
4. European Commission Joint Research Center's (JRC), Forest Fires in Europe, Middle East and North Africa 2023, published November 19, 2024
5. Earth Journalism Network, Egypt's Nile Delta Under Threat, Part 1: The Sea Engulfs Kafr El-Sheikh, published December 28, 2023
6. El-Raey, M., Dewidar, K. & El-Hattab, M., Adaptation to the Impacts of Sea Level Rise in Egypt, published September 1999

1.2 The Severity of Climate Risks Differs Across Regions

While climate change presents a shared global challenge, its effects on cities vary significantly by region. In the Arab region, cities are most critically affected by heatwaves and water scarcity, threats that are intensifying faster than many cities can adapt to. In contrast, European cities are more frequently exposed to floods and wildfires, especially in southern regions where rising temperatures are accelerating ecological volatility.

Exhibit 09: Flooding and wildfires as the main challenges for European cities, whereas droughts and heatwaves for Arab cities

Disaster	Selected KPIs	Europe region	Example cities	Arab region	Example cities
Water scarcity & drought	Water reservoir levels (%) Days under drought conditions per year	Low challenge	Seville Zaragoza Milan	Critical challenge	Amman Sana'a Algiers
Flooding & storms	Population/ infrastructure affected Number of flood events per year	Critical challenge	Venice Hamburg Ljubljana	Moderate challenge	Amman Jeddah Cairo
Heatwave	Maximum daily temperature anomaly Heat-related mortalities Number of heatwave days/year	Moderate challenge	Athens Seville Rome	Critical challenge	Riyadh Muscat Kuwait City
Sea-level rise	Rate of sea level change Relative sea level Shoreline erosion extent	Moderate challenge	Venice Rotterdam Copenhagen	Low challenge	Beirut Alexandria Manama
Wildfire	Burned area (hectares or km²) Time to containment (hours/days)	Critical challenge	Lisbon Marseille Thessaloniki	Low challenge	Algiers Tizi Ouzou Bcharreh

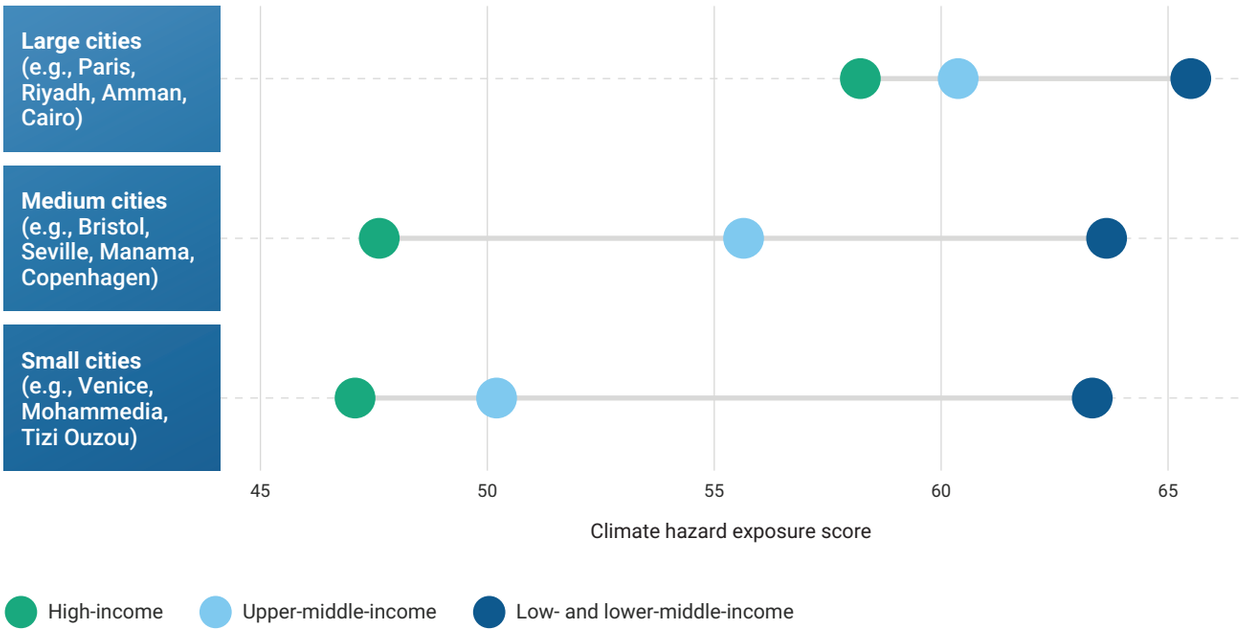
Low challenge Moderate challenge Critical challenge

Note: This is a qualitative assessment based on various data sources, articles and reports, rather than a quantitative classification;
Sources: World Bank Water Data; European Environment Agency; EM-DAT The International Disaster Database; Global Wildfire Information System; BCG Analysis

Climate risk exposure also differs by city size and income level. Data from the World Bank's report, Thriving: Making Cities Green, Resilient, and Inclusive in a Changing Climate (see Exhibit 10) shows that cities in low- and lower-middle-income countries, regardless of whether they are in Europe or the Arab region, face the highest levels of climate risk exposure. These cities often lack the infrastructure, funding, and governance systems required to prepare and respond effectively to climate-related disruptions. In contrast, wealthier cities may have more financial and human capital resources, but they remain vulnerable to cascading risks and require ongoing investment in adaptation.

Exhibit 10: Projected climate change-related risks are strongest for cities in low- and lower-middle-income countries

Average weighted overall climate change-related hazard exposure, by city size and country income group



Note: Country income groups are classified by Atlas GNI per capita US$ (Low income: <=1,135; Lower-middle income: 1,136-4,465; Upper-middle income; 4,466-13,845; High income: > 13,845), Small, medium, and large cities are those that in 2015 had a population of 50,000–199,999; 200,000–1.4999 million; and 1.5 million or more, respectively; Sources: World Economic Forum; World Bank; BCG Analysis

2. From Climate Risks to Systemic Challenges: Barriers to Effective Implementation

For cities, the most persistent barriers to effective climate action are increasingly institutional and behavioral, rooted in challenges of governance, planning, and institutional capacity. While many cities have developed climate adaptation and mitigation strategies, implementation is often delayed or inconsistently applied.

> "Plans partially exist, but execution falters. While cities often articulate both 'Resilience' and 'Net-Zero' goals, they struggle to operationalize them concurrently, often treating them in silos."
>
> **- Annika Zawadzki, Managing Director and Partner, BCG**

Urban climate action requires coordination across sectors and tiers of government. However, many cities continue to rely on outdated planning models that face fragmented governance structures, compounded by limited technical expertise and funding constraints.

2.1 Institutional and Governance Barriers to Climate Action

One of the most significant institutional challenges is the misalignment between existing urban planning frameworks and evolving realities of climate risk. Many cities continue to follow traditional models, often shaped by car-centric development or rigid zoning, that limit the integration of nature-based solutions, stormwater management systems, and climate-resilient design. These challenges are particularly evident in historic European city centers and in rapidly expanding urban areas in the Arab region, each of which presents unique retrofit challenges.

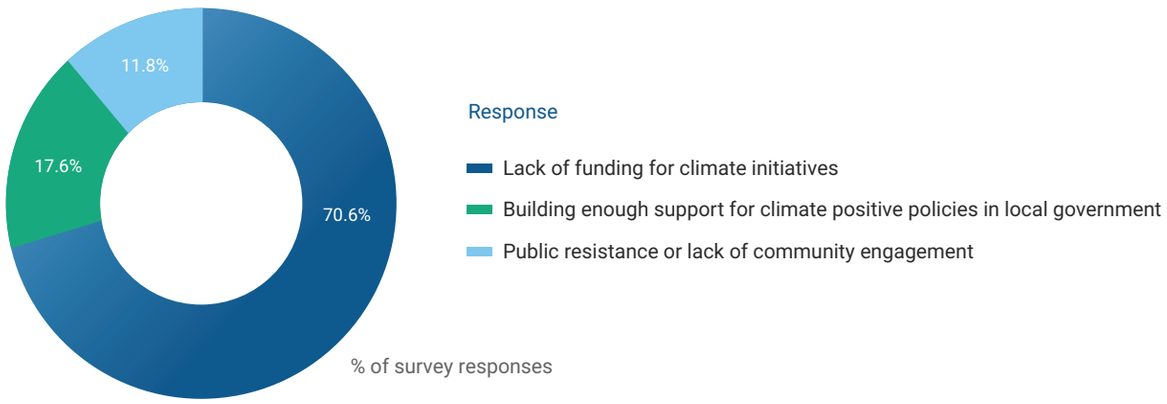
At the same time, governance limitations continue to affect implementations. While cities are increasingly developing climate strategies, many report a lack of technical expertise, dedicated staff, or clearly defined mandates for execution. Top-down governance frameworks may enable national alignment but can also constrain local flexibility and community engagement. Bottom-up approaches, meanwhile, may lack the resources to scale.

2.2 Financing Constraints Remain the Top Obstacle

Among all barriers, access to funding emerges as the single greatest challenge. According to the Cities Survey 2025, cities across both Europe and the Arab region identify financing constraints as the top obstacle to implementing their climate strategies.

Exhibit 11: Funding is the most significant barrier for 70.6% of surveyed cities

What is the biggest challenge you face for implementation of your city's climate strategy?

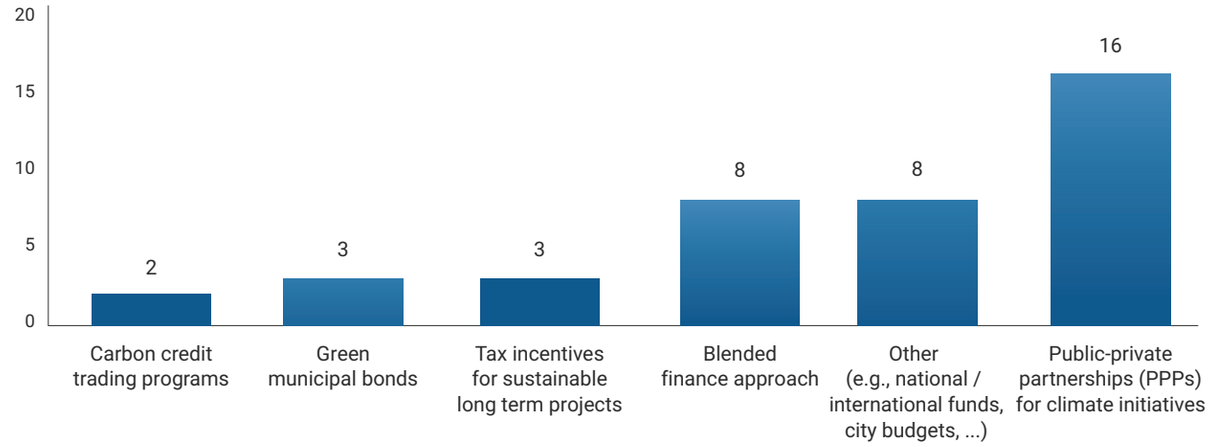


Source: Cities Survey 2025

Public-private partnerships (PPPs) have emerged as the most widely explored solution, with 58% of cities reporting that they are either using or have previously used PPPs for sustainability-related projects. This reflects a growing openness among cities to pursue external collaboration and innovation to accelerate climate initiatives.

Exhibit 12: Among financing options explored, PPPs are the most common, followed by blended finance approaches, green municipal bonds, and tax incentives

What financing mechanisms has your city explored for sustainability projects?



Source: Cities Survey 2025

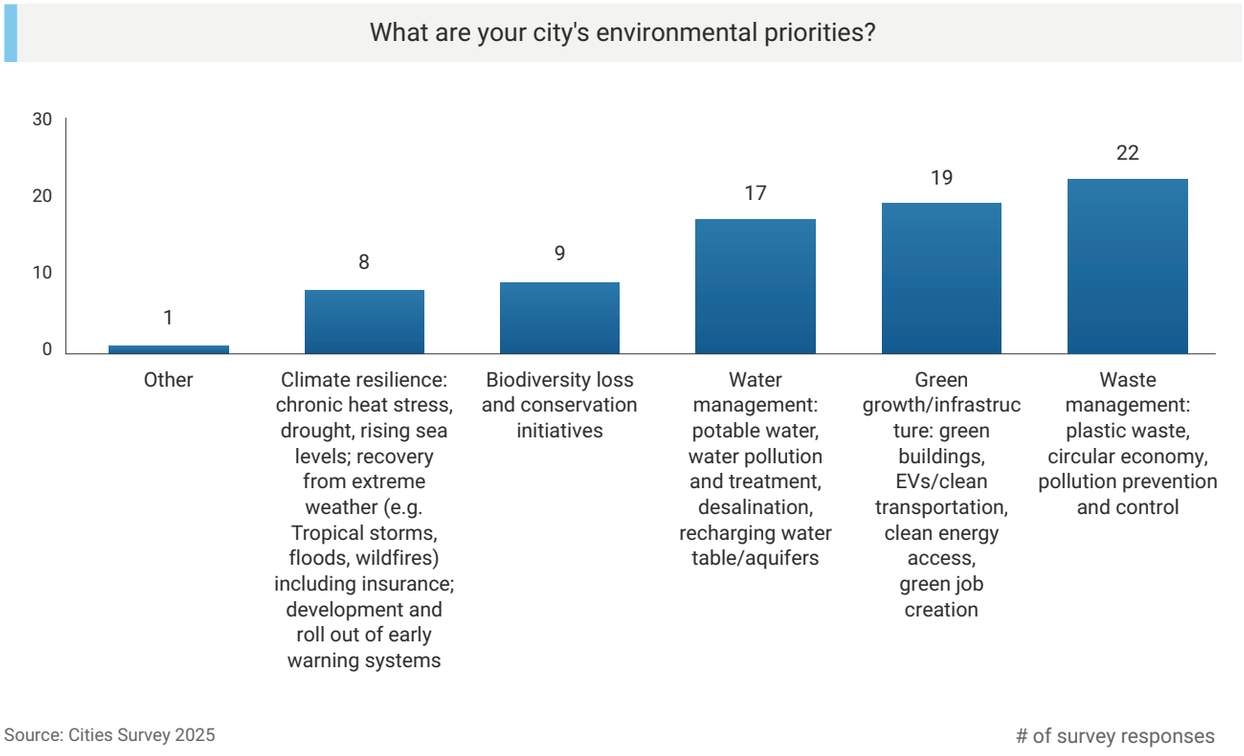
# of survey responses

Funding gaps remain especially pronounced in areas such as building retrofits, nature-based solutions, and early-stage climate adaptation measures, all of which require significant upfront investment and multi-year financial commitments.

2.3 Behavioral Hurdles to Urban Transformation

Institutional readiness alone is not sufficient. Transforming a city's climate profile also depends on public awareness and everyday behavior. Survey responses indicate that waste management and recycling have become leading environmental priorities for many cities, a promising signal that climate action is gaining traction at the citizen level.

Exhibit 13: Waste management ranks highest among environmental priorities, ahead of green infrastructure, biodiversity initiatives, climate resilience, and water management



Source: Cities Survey 2025

# of survey responses

Despite this progress, cities continue to face a range of behavioral hurdles that slow or complicate the implementation of climate-related policies. These challenges often stem from habits, cultural perceptions, socioeconomic pressures, or lack of trust in institutions. For example, car dependency—particularly in suburban or sprawling urban contexts—remains deeply embedded in lifestyle patterns, making the adoption of low-emission mobility options slower. Similarly, resistance to retrofitting older buildings due to cost concerns or disruption to daily life can delay energy-efficiency upgrades.

In some cities, limited public awareness of climate risks or scepticism about the urgency of climate action creates friction. In parts of the Arab region, for instance, cities face the challenge of maintaining public support for long-term initiatives while addressing short-term pressures such as housing, employment, and essential infrastructure, particularly in lower-income communities. In Europe, initiatives such as congestion pricing or car-free zones have occasionally met resistance from residents or local businesses, concerned about economic impacts, as seen in Milan during the early phases of the Area B low-emission zone implementation[7].

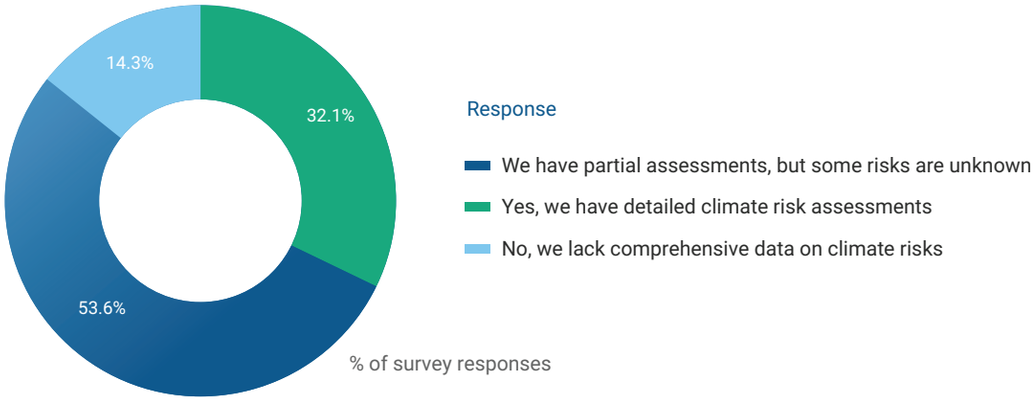
Behavioral hurdles can also emerge from a lack of inclusive engagement. Policies perceived as "top-down" or not aligned with local needs can face pushback even when well-intended. These behavioral patterns affect a city's ability to meet climate targets by slowing adoption, increasing implementation costs, or reducing the effectiveness of technical interventions.

2.4 Data Gaps and Risk Blind Spots

A less visible but equally critical challenge is the lack of detailed local climate risk assessments and data transparency. Many cities still do not have a complete understanding of their exposure and vulnerability to climate hazards due to the lack of data at city level, according to the Cities Survey 2025. Without this transparency, it becomes difficult to prioritize interventions, access finance, or engage communities around shared risks.

Exhibit 14: Cities' climate risk exposure and vulnerability are still partially unknown

Do you have transparency on your city's climate risk exposure and vulnerability?



Source: Cities Survey 2025

Real-world examples from both Arab and European cities highlight the impact of data gaps on climate action. In Jeddah, the lack of mitigation implementations such as flood risk mapping, contributed to devastating losses during a major flood event in 2009 that cost over 100 lives and over $2.5 billion in damages[8]. In contrast, Athens initially lacked localized data on urban heat exposure, which delayed targeted adaptation efforts. Through its resilience strategy, the city conducted detailed heat vulnerability mapping that revealed the most at-risk neighborhoods. This enabled Athens to launch heat mitigation initiatives such as tree planting and public cooling zones. These cases illustrate how missing data can stall or misdirect climate investment, while improved data transparency empowers cities to act more strategically and secure support for intervention.

7. Bocconi University, The Political Consequences of Green Policies: Evidence from Italy, published March 8, 2023
8. Hydrology, Flash Flood Impact Assessment in Jeddah City: An Analytic Hierarchy Process Approach, published February 6, 2020

2.5 A Shift in Momentum: Signs of Emerging Leadership

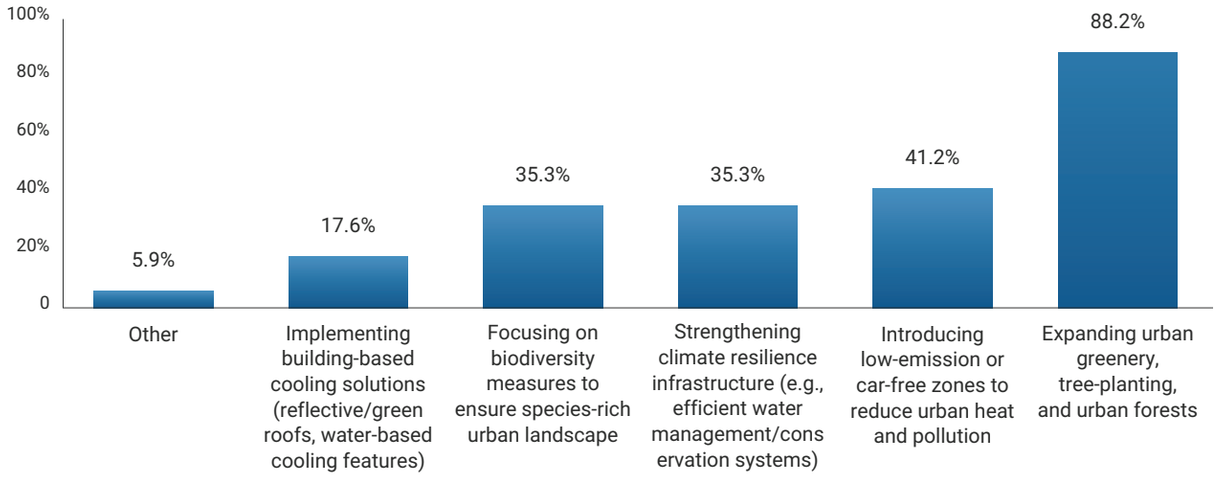
While the challenges cities face remain substantial, there are clear signs that the urban climate agenda is gaining momentum. Across both Europe and the Arab region, an increasing number of cities are moving beyond ambition and beginning to implement tangible, structured responses to climate change. Participation in international city networks, including the C40, is also on the rise, facilitating knowledge exchange and accelerating peer-driven progress.

> "Cities don't compete against each other, they learn from each other!"
>
> **- Jose Herrera, Director General of International Relations at Madrid City Council**

Survey results further show that many cities are investing in practical adaptation measures. Among these, urban greening, including tree planting and expanded green spaces, has emerged as one of the most widely implemented initiatives.

Exhibit 15: Expanding urban greenery is the leading adaptation initiative, with 88.2% of cities reporting implementation or planned action

What major climate adaptation initiatives has your city implemented or plans to launch?



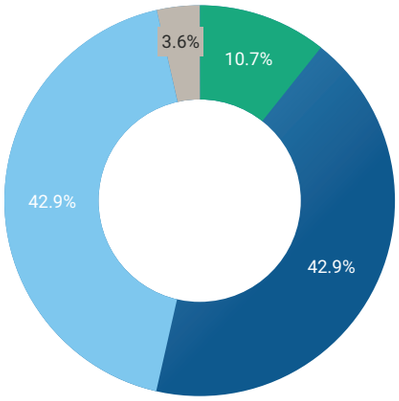
Source: Cities Survey 2025

% of survey responses

In Europe, momentum around net-zero goals is accelerating. More than 100 cities have pledged to achieve net-zero emissions by 2030 through the European Union (EU) Cities Mission. This effort is supported by the European Climate Law, which establishes a 55% emissions reduction target by 2030 and full climate neutrality by 2050. Similar ambitions are gaining traction in the Arab region, where countries such as the United Arab Emirates (UAE), Oman, and Saudi Arabia are setting national net-zero targets and aligning urban development strategies accordingly.

Exhibit 16: Just 10.7% of surveyed cities identify as ‘climate-first’, with the majority falling into emerging or pragmatic sustainability categories

Which of the following best describes your city’s approach to sustainability?



Count	Response
42.9%	"Sustainability Pragmatist" – Our city is committed to sustainability but must balance environmental goals with economic growth and social equity
10.7%	"Climate-First City" – Our city prioritizes sustainability and has set aggressive targets for net-zero emissions, urban greenery, and climate adaptation
42.9%	"Emerging Sustainable City" – We are in the early stages of sustainability planning and need more resources, funding, and governance support
3.6%	Other

% of survey responses

Source: Cities Survey 2025

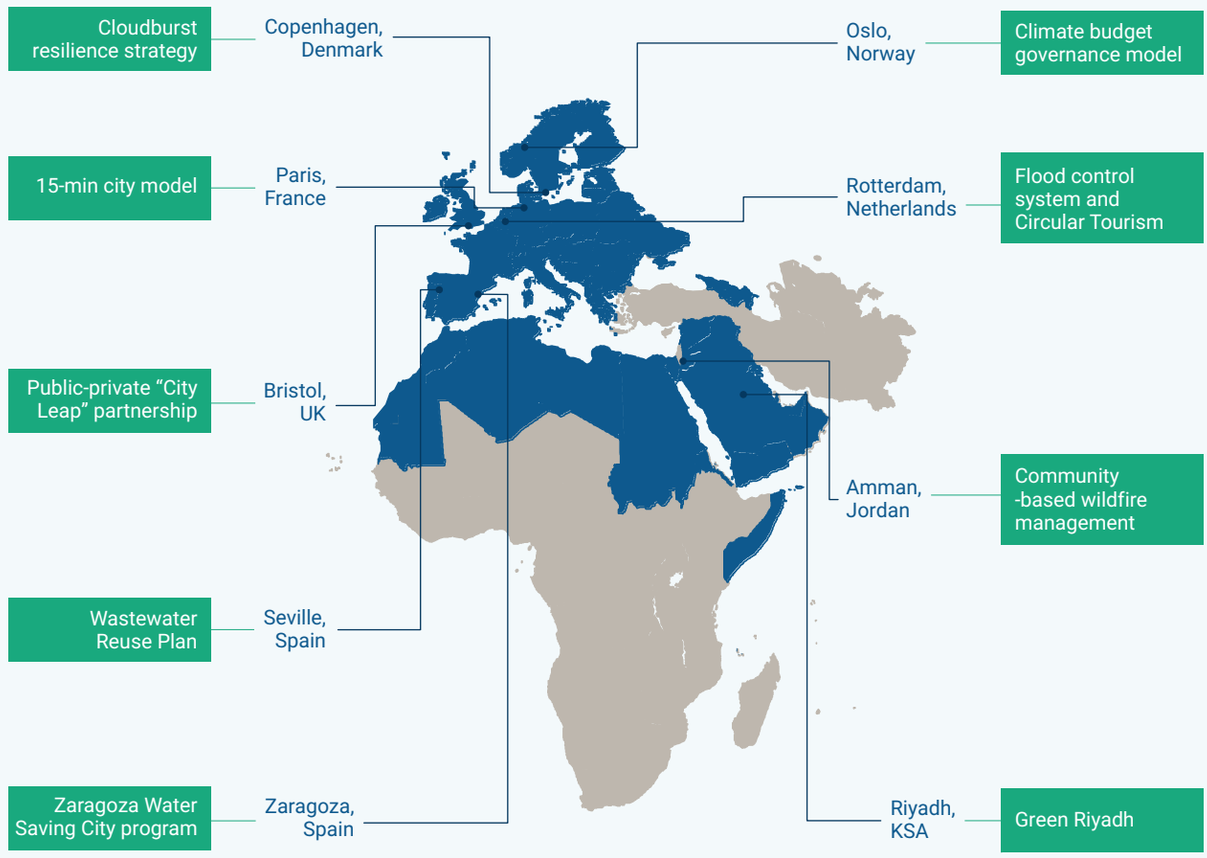
Nonetheless, the momentum is clear. Net-zero strategies are being integrated into masterplans, and climate neutrality is evolving into a shared vision across regions. More cities are placing climate action at the center of their urban agendas, signalling a shift from ambition to structured implementation.

3. Scaling What Works: Best Practices and Innovations

Cities across the Arab region and Europe are facing a growing range of climate-related pressures, from intensifying heatwaves and prolonged droughts to coastal erosion and flash flooding. These challenges are not only environmental but also institutional, financial, and social in nature. Yet, cities are actively responding. A wave of innovative solutions is emerging to reshape how urban areas adapt and build resilience.

This section highlights emerging trends and replicable best practices from both regions, mapped to nine core challenges identified. The examples demonstrate how cities are turning climate risks into opportunities.

Exhibit 17: For each of the nine challenges, we identified best practices from European and Arab cities that showcase effective climate adaptation and mitigation initiatives



Source: BCG analysis

3.1 Tackling Heatwaves: Cooling Cities Through Nature

Extreme heat is among the deadliest climate threats, especially in fast-growing cities with limited green space. Municipalities are responding with nature-based solutions such as large-scale tree planting, heat-reflective infrastructure, passive cooling techniques, and expanded reuse of water for irrigation. These strategies improve livability while reducing energy demand and air pollution.

Riyadh, Saudi Arabia, is addressing extreme heat, where summer temperatures can exceed 55°C, through one of the world's largest green initiatives—the 'Green Riyadh' project.

Introduced to enhance the city's resilience to rising temperatures, the project aims to plant 7.5 million trees and expand green cover from 1.5% to 9% by 2030. Native and drought-tolerant plants are irrigated using recycled wastewater to ensure sustainable water management. Early outcomes include lower surface temperatures, improved air quality, and enhanced urban comfort—critical achievements for a city expected to reach 20 million residents by the end of the decade.

"Riyadh faces extreme heat challenges intensifying with climate change, requiring innovative urban cooling strategies. The "Green Riyadh" program represents one of the world's most significant urban afforestation projects, aiming to plant 7.5 million trees across the city to reduce temperatures and improve air quality."

- Eng. Mohammad Omar Aba AlKhail, Advisor to H.H. the Mayor of Riyadh, General Supervisor of International Cooperation in Riyadh Region Municipality

3.2 Flood Management: Adapting to Urban Flash Floods

With flooding becoming more frequent and intense, urban areas with limited drainage capacity are deploying integrated approaches to stormwater management. Solutions include green corridors, dual-use public spaces designed to absorb excess water, and underground retention systems that protect neighborhoods and infrastructure during peak rainfall events.

Copenhagen, Denmark, transformed a moment of crisis into an opportunity to build long-term flood resilience.

After a destructive storm in 2011, the city launched its Cloudburst Master Plan, an initiative featuring 300 projects that blend green corridors and public spaces with underground tunnels. This integrated system not only manages excess rainfall but also enhances the city's livability through accessible and climate-ready urban environments.

3.3 Preventing Wildfires: Nature-based Solutions

Climate change is intensifying wildfire risks, with peri-urban areas among the most affected. Effective mitigation blends ecological management (for example, forest thinning, firebreaks) with education and community-based response systems.

In Jordan, a community-led approach is helping reduce wildfire risk in a country with limited forest cover.

Through a collaboration with the Food and Agriculture Organization (FAO), the government implemented a strategy that trains local firefighters, forest rangers, and residents in fire prevention and rapid response. In just two years, the burned area was reduced by 50%, demonstrating how localized preparedness and knowledge-sharing can significantly reduce climate-related hazards.

3.4 Combating Water Scarcity: Circular Approaches to Water Use

Water stress is intensifying in many urban areas, requiring a shift from conventional supply systems to circular approaches. In response, municipalities are investing in wastewater recycling, promoting greywater reuse in buildings, and diversifying supply sources. Success often depends not only on infrastructure but also on aligning regulatory frameworks, pricing policies, and public awareness.

Lisbon, Portugal, is setting a benchmark in circular water management by rethinking how cities use non-potable water.

In response to increasing drought risk, the city developed a citywide system to reclaim wastewater for reuse. Today, three treatment plants feed a dedicated "purple pipe" network used for street cleaning and park irrigation. This initiative has reduced the city's potable water consumption for non-drinking uses by 69%, saved millions in costs, and cut emissions from water-related operations, while gaining strong public support.

3.5 Defending Coastal Cities: Mitigating Sea-level Rise

Coastal and delta cities are increasingly vulnerable to sea level rise, which threatens historic centers, ports, and housing across both Arab and European coastal cities. To address these risks, cities are turning to a mix of engineered and nature-based solutions, including sea barriers, beach nourishment, and modular infrastructure designed to absorb or deflect water during storms and tidal surges.

Venice, Italy, has invested in a large-scale infrastructure solution through the MOSE Flood Control System.

The city installed 78 mobile gates at strategic points in its lagoon to prevent flooding during storm surges of up to 1.3 meters. Since its implementation, the system has already stopped dozens of flood events, safeguarding Venice's cultural and economic assets. This initiative illustrates the scale and urgency required for long-term coastal adaptation.

3.6 Shifting Urban Planning Paradigms: From Car-centric to Climate-centric

Legacy urban planning models—focused on car dependency and low-density development—are steadily being replaced by climate-smart alternatives. Cities are prioritizing compact neighborhoods, mixed-use zoning, expanded cycling infrastructure, and public transport to reduce emissions and increase accessibility, and enhance overall urban resilience.

Paris is at the forefront of this shift, redefining mobility and neighborhood design through its 15-minute City model.

Under this vision, residents can access essential services within a short walk or bike ride. More than 600 miles of protected bike lanes and dozens of newly created green spaces support this transformation. As a result, car use has declined by 45%, air quality has improved, and new green jobs have been generated, improving equity and wellbeing.

3.7 Closing Governance Gaps: Institutionalizing Climate Leadership

One of the most persistent barriers to climate progress is the gap between planning and implementation. To address this, cities are reforming governance structures by assigning emissions targets to departments, tracking progress in real time, and embedding climate goals into financial planning.

> "Long-term thinking is key! Cities should explore governance reforms that embed future-oriented accountability mechanisms to hold city officials accountable for the impacts of their decisions in the future."
>
> **- Yvonne Zhou, Managing Director and Senior Partner, BCG**

Oslo, Norway, demonstrates a way in which cities are embedding climate accountability into budgeting processes.

Introduced in 2017, the Climate Budget Model sets annual emissions caps by sector and embeds climate oversight into the finance department's operations. This approach ensures that each municipal agency is accountable for its emissions performance. Since its implementation, Oslo has reduced its citywide emissions by 30% compared to 2009 and has become one of the first cities globally to operate a fully electric public transport system.

3.8 Unlocking Climate Finance: From Vision to Investment

Securing finance for large-scale climate initiatives continues to be a major challenge for many cities. To bridge this gap, cities are increasingly adopting innovative financing mechanisms, such as green bonds, PPPs, and multilateral lending are helping cities move from project plans to real-world results.

Bristol, United Kingdom (UK), illustrates this shift through the City Leap Joint Venture.

Through a 20-year partnership with private-sector firms, Bristol has secured £1 billion in investment to accelerate its net-zero targets. The funds are supporting projects such as solar installations, building retrofits, and expanded district heating networks. Beyond environmental benefits, the initiative has also generated over 1,000 new jobs and established a £1.5 million community energy fund to support local initiatives.

3.9 Raising Public Awareness: Changing Behavior Through Local Action

Behavioral change is fundamental to achieving effective climate action at the urban scale. From reducing food waste to conserving water or shifting transport habits, cities are increasingly recognizing the importance of community-driven strategies. Through education campaigns, incentive programs, and neighborhood-level projects, cities are cultivating a culture of shared responsibility that strengthens long-term climate resilience.

Zaragoza, Spain, offers a leading example through its Zaragoza Water Saving City program.

In response to rising water demand and low levels of public awareness, the city launched the campaign combining education, business partnerships, and practical guidance such as the "100 Water-Saving Measures" booklet. The initiative promoted efficiency improvements in both homes and public buildings. Over 15 years, Zaragoza achieved a 30% reduction in water consumption, saving more than one million cubic meters annually. Public awareness around conservation more than doubled, positioning the city as a global model for citizen-driven resource management.

4. Accelerating Progress: Key Steps Forward

As the impacts of climate change grow more intense and interconnected, cities can evolve from isolated initiatives toward integrated, long-term strategies based on risk assessments and prioritisation. The lessons highlighted throughout this chapter point to a clear imperative: advancing climate resilience requires a systems-level approach, rooted in governance reform, innovative financing, scalable solutions, and empowered communities.

To guide urban decision-makers, this report outlines four strategic priorities to accelerate climate action in cities.

4.1 Strengthen Governance and Policy

Effective climate adaptation begins with strong governance frameworks. Cities need clear mandates, updated policies, and planning frameworks that align urban development with climate risk management. Integrating resilience into masterplans, zoning codes, and public infrastructure standards ensures that every new investment is climate-informed and future-ready.

Key Actions:

- Integrate climate resilience into urban master plans to ensure long-term alignment with sustainability goals.
- Mandate climate risk assessments for all major developments and prioritize science-based actions.
- Revise building codes and infrastructure standards to reflect future climate scenarios.
- Embed future-oriented accountability mechanisms for city officials.
- Set coherent visions, policies, and cross-sectoral strategies to guide climate investment and land use.
- Break down institutional silos to enable coordinated policy execution.

4.2 Mobilize Finance

Financing remains one of the most critical barriers cities face when translating climate goals into actionable results. Bridging this gap requires not only more funding but smarter funding—leveraging a mix of public, private, and international sources to drive investment at scale.

Key Actions:

- Diversify funding sources by leveraging green bonds, PPPs, and blended finance mechanisms.
- Apply cost-benefit and "resilience dividend" frameworks to justify and prioritize investments.
- Foster private sector innovation by showcasing the economic opportunities embedded in urban climate action.

> "Climate action is an economic opportunity, not just a cost, as shown by the growth in tech, AI, and drone industries driven by sustainability efforts."
>
> **- Yvonne Zhou, Managing Director and Senior Partner, BCG**

4.3 Scale Sustainable Solutions

To build long-term resilience, cities can focus on scaling proven solutions—those that are low-carbon, resource-efficient, and inclusive. Nature-based infrastructure, sustainable transport systems, and urban planning models all offer pathways to reduce emissions while improving livability.

Key Actions:

- Expand urban greening programs and protect surrounding natural ecosystems.
- Promote hybrid water systems that combine gray and green infrastructure.
- Support compact, walkable urban forms and climate-resilient public transit networks.

4.4 Drive Innovation and Capacity Building

Achieving lasting climate action depends not only on infrastructure but on people. From public officials and utility managers to residents and youth leaders, cities can invest in building local technical skills, institutional coordination, and platforms for public participation.

Key Actions:

- Foster local buy-in by integrating community needs into solution design.
- Build technical capacity among municipal staff, with a focus on urban planning, finance, and climate data.
- Engage communities and youth in co-creating solutions, from climate education to neighborhood-level projects
- Explore cluster strategies that enable cities to specialize in climate innovation areas and share expertise across regional networks.

"Resilience is not just a technical fix–it requires an integrated approach and an understanding of community needs, governance context, and ensuring local buy-in."

- Annika Zawadzki, Managing Director and Partner, BCG

Digital Transformatio

From Innovation to Implementation at Scale

03

03 Digital Transformation: From Innovation to Implementation at Scale

1. Overview of Current Landscape

Urban transformation today is no longer limited to physical infrastructure—it is increasingly digital. In an era where public expectations are shaped by the immediacy and personalization of private-sector platforms, cities face a growing mandate to deliver smarter, faster, and more connected services.

> "Digital transformation acts as the catalyst for creating efficiencies, enhancing service delivery, and generating data-driven insights that optimize resource allocation across all sectors."
>
> **- Eng. Mohammad Omar Aba AlKhail, Advisor to H.H. the Mayor of Riyadh, General Supervisor of International Cooperation in Riyadh Region Municipality**

An analysis of cities across the Arab region and Europe reveals that digital maturity remains uneven and evolving. While a small number of cities have articulated comprehensive AI strategies (Exhibit 18), the majority remain in developing stages of their digital journey. This variation highlights differences in the unique contexts and strategic priorities that shape each city's digital transformation strategies.

Exhibit 18: Several cities in Europe and Arab region pioneer dedicated AI strategies to move fast into the new reality, prioritize resources and enhance government services

Amsterdam has articulated its AI vision through the document titled Amsterdamse Visie op AI. This strategy emphasizes a human-centered, ethical, and transparent approach

Barcelona has implemented the Municipal Strategy on Algorithms and Data to Ethically Drive Artificial Intelligence (AI), a comprehensive framework guiding the application of AI in municipal management and services. This strategy emphasizes respecting citizens' digital rights and includes a protocol for incorporating AI into all municipal services in alignment with legal, ethical, and technical standards

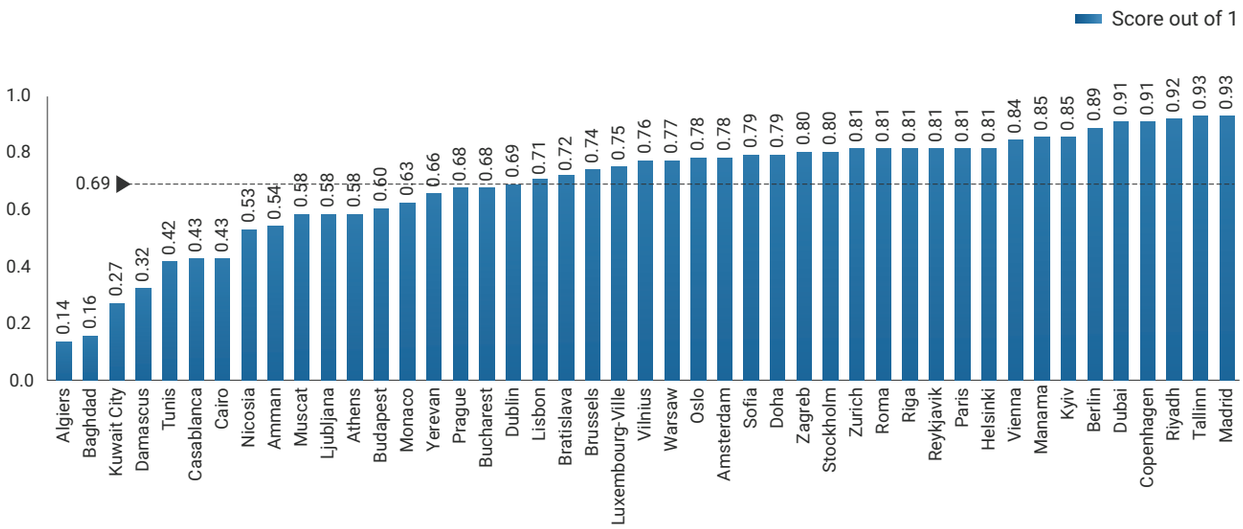
Abu Dhabi Government Digital Strategy 2025/2027 outlines the emirate plan to become the world first fully AI-native government. The strategy focuses on integrating AI across government services, enhancing digital infrastructure, and promoting innovation

Dubai has launched the Dubai Universal Blueprint for Artificial Intelligence (AI), a comprehensive strategy aiming to integrate AI across all sectors of the city. This blueprint is designed to accelerate AI adoption, enhance productivity, and contribute significantly to the city's economy. It outlines initiatives to position Dubai as a global leader in AI by fostering innovation and implementing AI solutions citywide

Providing a quantitative perspective on digital maturity, the United Nations' Local Online Service Index (LOSI) measure how effectively local authorities are using digital platforms to deliver public services, inform citizens, and enable participation. The 2024 LOSI data (Exhibit 19) shows a wide range of performance variation across cities in both the Arab and European regions. Leading performers such as Madrid, Tallinn, Riyadh, Copenhagen, and Dubai scored above 0.9, highlighting strong capabilities in digital service delivery. In contrast, the overall average score of approximately 0.67 points to moderate digital maturity overall, emphasizing the need for continued progress toward more advanced digital readiness. While many cities are demonstrating steady development, others need to overcome significant gaps to advance further.

Exhibit 19: LOSI scores reveal wide variation in local digital maturity, with an average score of ~0.67 indicating moderate digital maturity and signaling room for further growth and development

- The Local Online Service Index (LOSI) is a performance measurement tool developed by the UN, to assess the digital maturity of local governments
- It evaluates how effectively local authorities use digital platforms to provide public services, inform citizens, and facilitate participation



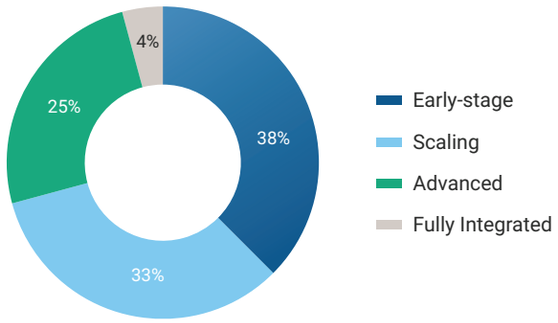
Sources: United Nations

Despite differences in maturity and visibility, a consistent theme emerges across both regions: many cities remain in the early stages of their digital transformation journeys. According to the Cities Survey 2025, only 4% of participating cities consider themselves fully integrated in their digital development, while the majority identified as being at an early stage.

Nonetheless, early progress is evident. More than half (54%) of survey cities report that their smart city initiatives have led to visible improvements in citizens' quality of life. This demonstrates that, even in the early stages, targeted digital initiatives are already contributing meaningfully to urban well-being and service delivery.

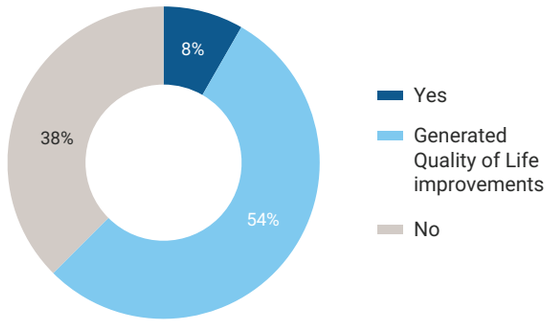
Exhibit 20: Most cities identify as early-stage in digital transformation, yet 54% report quality of life improvements from the smart city initiative

Majority of the cities surveyed place themselves as emerging in digital transformation…



Q. How would you describe your city's current stage of digital services/integration?

… and majority (54%) say it has generated quality of life improvements



Q. Have your smart city initiatives generated visible returns on investment (ROI) and efficiencies?

Sources: Cities Survey 2025

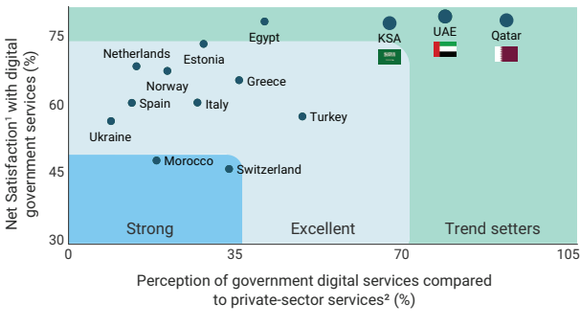
Notably, Gulf Cooperation Council (GCC) countries are emerging as global leaders in digital transformation, particularly in the delivery of government digital services. The left panel of Exhibit 21 plots citizen satisfaction against perceptions of how government digital services compare to private-sector offerings. Countries such as the UAE, Qatar, Egypt, and Saudi Arabia are positioned in the upper-right quadrant, indicating both high satisfaction and strong relative performance. Similarly, Norway, Estonia, and Netherlands also demonstrate high satisfaction, although with slightly lower perceived alignment to private sector standards.

Usage trends reinforce this leadership. Between 2022 and 2024, the percentage of respondents in the GCC accessing government services online rose by 4%, placing the region above the global average. In contrast, Europe saw a 2% decline in usage during the same period.

Together, these findings underline the growing maturity and impact of digital government initiatives in the GCC. With increasing levels of satisfaction and adoption, the region is establishing itself as a benchmark for citizen-centric digital transformation.

Exhibit 21: Comparative performance of digital government services: High satisfaction and increasing digital engagement position GCC countries as frontrunners in government digital transformation

GCC countries lead globally in citizen satisfaction with government digital services, especially when they match or exceed private sector standards

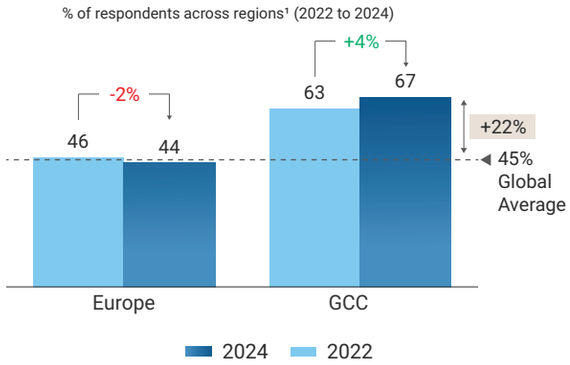


Q.How satisfied are you with the use of the internet in delivering various types of government services?

Q. Are government online services better than those offered by the private sector?

1. Net satisfaction is the percentage of satisfied respondents minus the percentage of dissatisfied respondents. 2. Respondents that agree government online services are better compared to those offered by private sector.; Source: 2024 BCG Digital Government Citizen Survey.

Government service usage in GCC countries is well above global average (+22%) with an upward uptake trend since 2022



Q. How often do you access government services online?

1. Respondents using government services at least once a week or more
Source: 2024 BCG Digital Government Citizen Survey.

2. Unpacking the Core Challenges Facing Cities' Digital Transformation

Cities encounter several challenges in advancing their digital agendas. While many are shared across geographies, some challenges remain region-specific, shaped by local political structures, institutional dynamics, and talent availability.

This section outlines challenges across five key areas: governance, talent and restrictions, digital infrastructure, citizen-centricity and satisfaction, and financing and PPP.

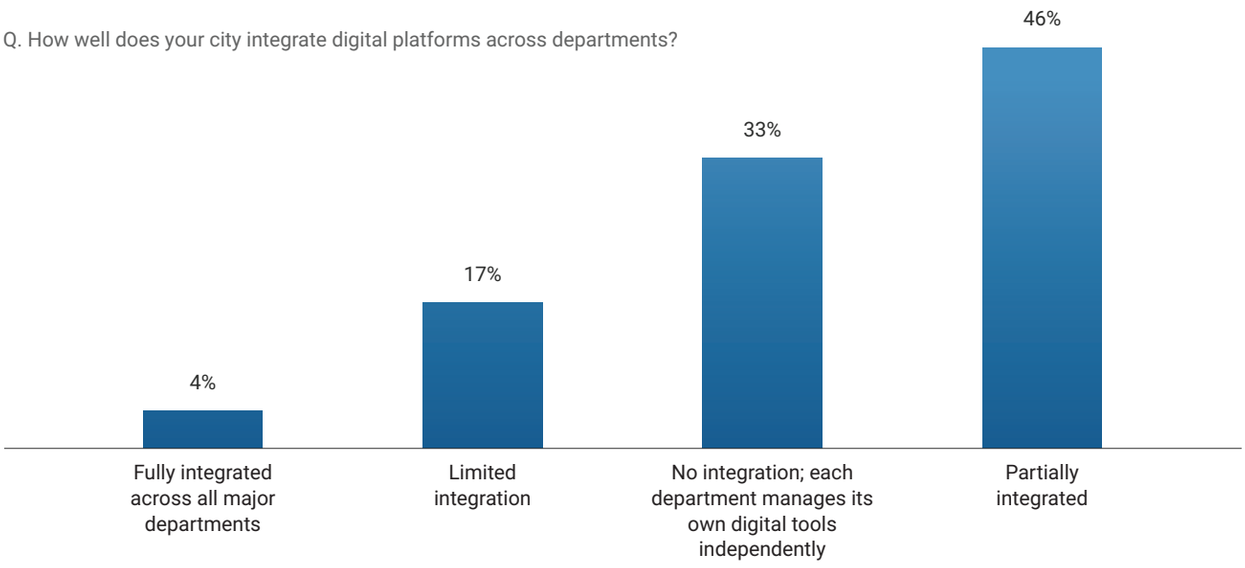
2.1 Governance

Governance-related challenges frequently emerge across cities in both regions, driven by siloed departments and limited engagement with the broader ecosystem. This fragmentation inhibits coordinated digital transformation efforts.

Additionally, many cities lack robust frameworks to measure the social impact of digital initiatives, making it difficult to evaluate effectiveness and adjust strategies accordingly.

As reflected in Exhibit 22, approximately half of the surveyed cities report limited or no integration of digital platforms across departments, with only a minority stating that their systems are fully integrated across major departments.

Exhibit 22: Levels of digital platform integration across city departments— Integration across government departments remains limited, with half of the cities reporting little or no integration of digital platforms across departments



Sources: Cities Survey 2025, BCG Analysis

While these challenges are common, regional dynamics introduce distinct governance constraints. In Arab cities, centralized structures often limit local customization of digital solutions. By contrast, in European cities, short political cycles disrupt the funding and continuity of multi-year transformation programs.

2.2 Talent and Restrictions

A common constraint in digital transformation across both regions is the limited availability of AI expertise and insufficient advanced digital literacy. These gaps present a significant barrier to the development and implementation of complex digital solutions within the public sector.

In Arab cities, this challenge is further intensified by a heavy reliance on foreign expertise. With local talent pipelines still developing, cities face sustainable concerns around access to skilled professionals critical for digital advancements.

2.3 Digital Infrastructure

Outdated digital infrastructure continues to be a major constraint for many cities. Legacy systems, deeply embedded within public administration, complicate integration efforts and slow the adoption of modern digital tools. These inflexible and often incompatible systems limit cities' ability to implement comprehensive digital transformation initiatives effectively.

2.4 Citizen-centricity and Satisfaction

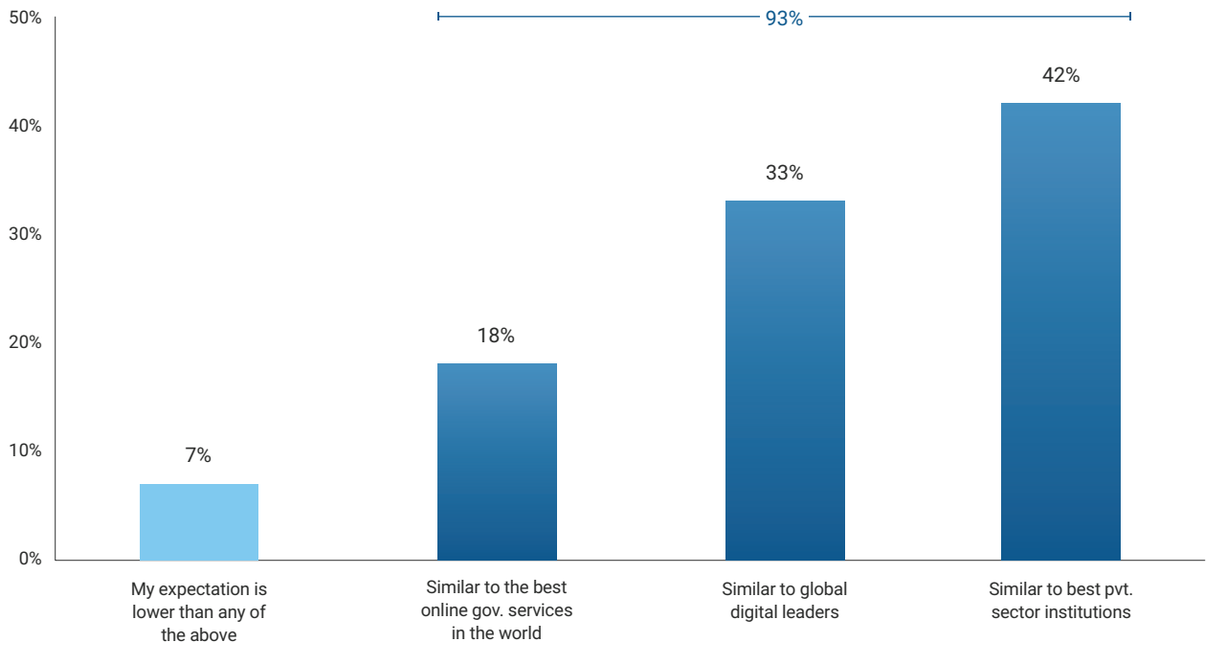
Cities acknowledged that citizen-facing services often lag behind expectations, highlighting the need for more user-centric approaches. There is increasing pressure to match the service quality typically associated with the private sector. Low levels of citizen involvement further widen this gap, limiting the effectiveness of government-led digital initiatives.

As cities continue to advance their digital transformation agendas, one of the most consistently cited challenges is meeting rising public expectations.

Global data from BCG's 2024 Digital Government Citizen Survey shows that 93% of respondents expect governments to deliver public services on par with leading private-sector digital experiences (Exhibit 23). This high level of expectation emphasizes the growing importance of personalization, ease of access, speed, and convenience in service design and delivery. Aligning with these expectations presents a significant opportunity for cities to enhance public trust and satisfaction through user-centric digital transformation.

Exhibit 23: Citizen expectations for online government service quality–93% expect standards comparable to private sector or global digital leaders

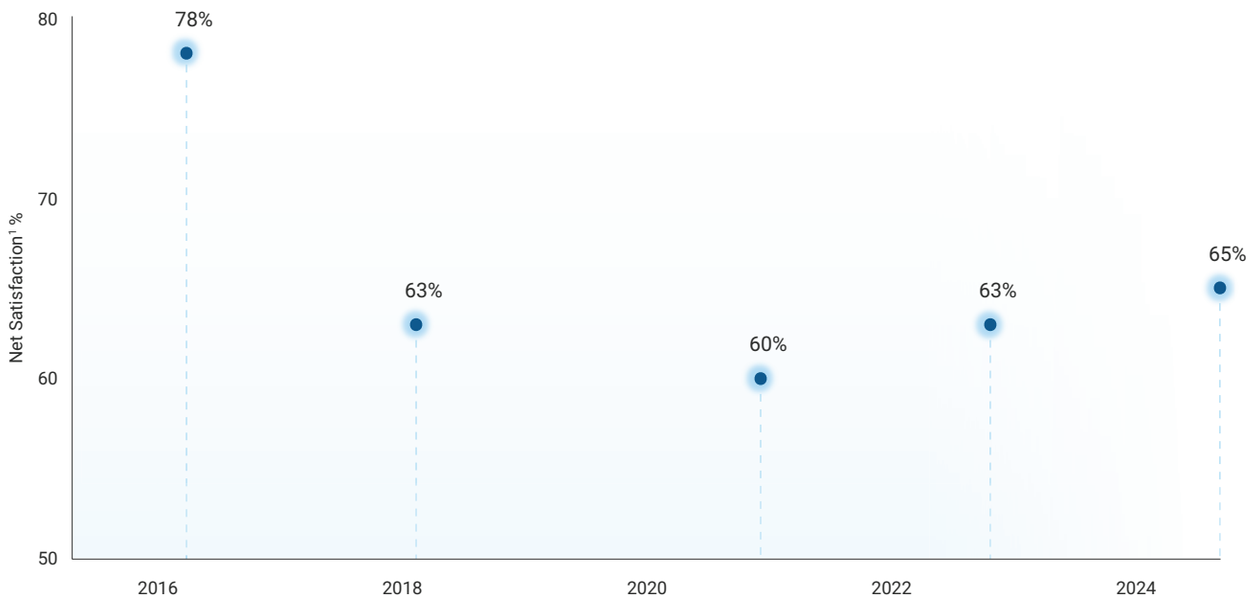
Q. In your opinion, to what quality standard do you think online government services should be delivered, in terms of speed, convenience, ease of access, personalisation, etc.?



Source: BCG 2024 Digital Government Citizen Survey, across 38 countries

While citizens' expectations for digital government services continue to rise, many governments are struggling to keep pace. Net satisfaction levels remain relatively modest at approximately 65%, despite gradual improvements in recent years. Since 2020, survey data have shown a pattern of moderate, incremental gains (Exhibit 24). These trends reinforce the need for more accelerated and user-focused digital transformation.

Exhibit 24: Net satisfaction with digital government services has improved modestly since 2020 but remains below 2016 levels



1. Net satisfaction = total satisfied less total dissatisfied
Source: Digital Government Citizen Survey 2024, 2022, 2020, 2018 and 2016 - Global survey including 38 countries

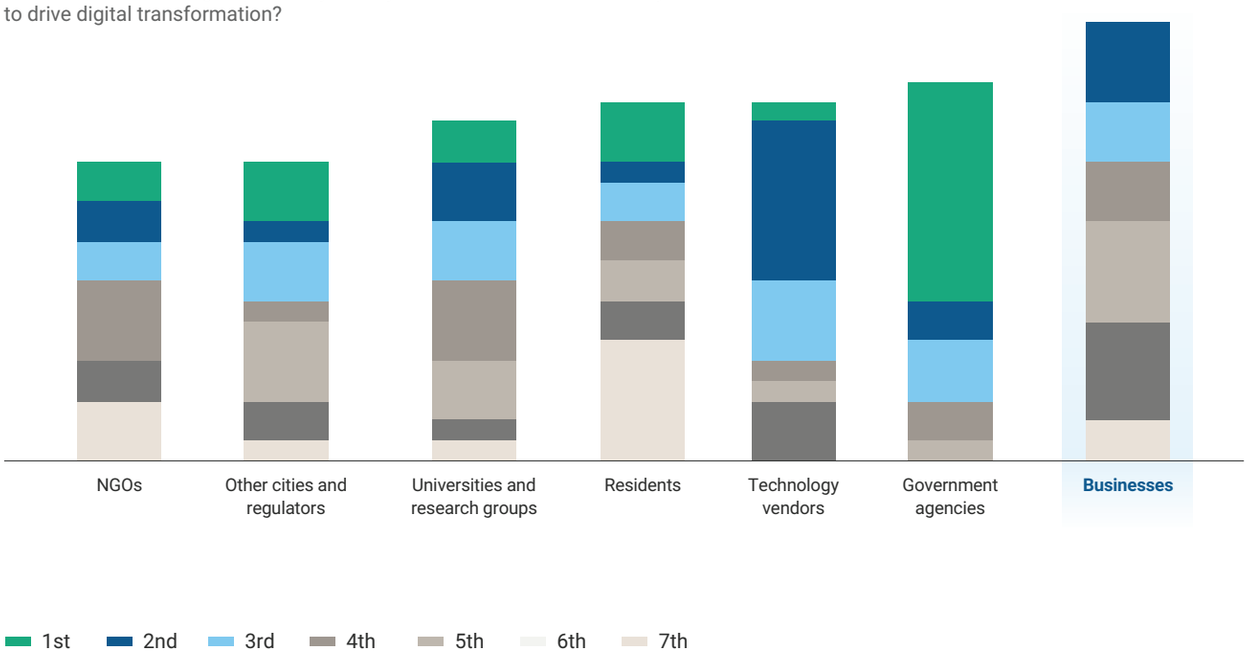
2.5 Financing

Financing also emerged as a key friction point for many cities pursuing digital transformation. Cities reported difficulties in achieving financial independence and creating effective incentives to support sustainable digital initiatives. This challenge is further compounded by limited collaboration with key external stakeholders.

According to the Cities Survey 2025, businesses were rarely ranked among the most important partners driving digital transformation (Exhibit 25). Businesses were never ranked first and were only occasionally selected second, indicating that their perceived role in the digital initiatives remains relatively low. This limited collaboration with the private sector suggests an underutilized opportunity for co-creation, innovation, and resource mobilization. Addressing both internal fragmentation and broader ecosystem engagement will be essential for cities seeking to accelerate and sustain digital progress.

Exhibit 25: Businesses rarely ranked as key collaborators in digital transformation, highlighting an underutilized stakeholder group

Q. Which stakeholder groups does your city collaborate with most closely to drive digital transformation?



Sources: Cities Survey 2025

While the challenges facing cities are significant, the experiences of those making meaningful progress suggest that the returns on investing in digital transformation can be substantial. For governments that invest in overcoming these hurdles, the benefits extend across operational efficiency, service quality, policy support, and broader economic value.

Key impacts include improved service quality and cost reduction through more streamlined operations, as well as enhanced citizen experience that fosters greater trust in public institutions. Digital transformation also enables better-supported policy design and facilitates the deployment of new services and innovative business models.

Internally, digital transformation encourages agile and collaborative government operations. Data-driven decision-making plays a central role in streamlining processes, accelerating service delivery and ensuring more consistent and reliable interactions.

By improving service quality and operational capacity, governments can unlock new revenue potential and contribute to the broader momentum of national digital economy efforts. These cumulative benefits underscore the importance of a proactive, sustained commitment to digital advancement, where even incremental progress can generate a tangible impact for both institutions and citizens.

3. Learning from Success: Best Practices and Trends

As cities advance their digital agendas, six strategic focus areas have emerged as critical enablers of success. These areas reflect a synthesis of lessons learned and successful approaches that are helping cities navigate complexity and deliver meaningful impact.

3.1 Integrated Governance: Driving Cross-government Collaboration

Effective digital transformation requires cross-government collaboration to break down department silos and enable unified public service delivery. When supported by integrated digital platforms and cohesive governance structures, such collaboration amplifies the impact of infrastructure investments and helps scale transformation more effectively. Cities that embrace ecosystem-wide integration are seeing tangible benefits and realizing meaningful progress in their digital transformation efforts.

> "Cross-organizational collaboration is crucial for digitalization, as it promotes the exchange of ideas and knowledge, breaks down divisional thinking, enables the integration of interdisciplinary perspectives and thus accelerates the development of innovative solutions"
>
> **– Matthias Wieckmann, Head of Digital Strategy at the Office for IT and Digitalization in the Senate Chancellery of the Free and Hanseatic City of Hamburg**

For example, **Al Karak, Jordan,** launched the "One Click Service" portal to unify multiple departments under a single citizen-facing platform. This initiative illustrates that even smaller municipalities can achieve city-wide integration through coordinated digital service delivery.

In large metropolitan environments, **Amsterdam, Netherlands,** has built the "InChange" platform to enable collaboration between government entities, knowledge institutions, social organizations, and the private sector. This ecosystem-driven approach is helping the city address metropolitan challenges through shared data and collaborative problem-solving. This model showcases how digital tools can foster inclusive and innovative ecosystems.

A similar outcome has been achieved in **Sofia, Bulgaria,** where a centralized mobile application allows residents to access a range of public services, such as parking payment alerts, public transportation checks, property tax payments, and service disruption updates, through a single interface. This improves user convenience and transparency while streamlining services.

Abu Dhabi – Abu Dhabi: Unified Digital Services through TAMM

Abu Dhabi launched Tatweer Abu Dhabi Modern Model (TAMM), a unified digital services platform that integrates nearly 950 government services into a single interface. Designed to enable full end-to-end transactions, TAMM enables residents to complete processes ranging from paying traffic fines to registering vehicles and obtaining marriage certificates.

The platform synchronizes data and workflows across departments and leverages cloud and AI tools—including Arabic-language virtual assistants—to manage complex queries and sync insurance with registration.

In one year alone, more than 2.5 million users completed over 10 million transactions via TAMM, reflecting both adoption at scale and operational efficiency[1].
A key driver of success was strong level leadership commitment and sustained inter-agency collaboration, which enabled a "one government" mindset and overcame long-standing silos[1].

3.2 Citizen-centricity: Embedding Residents' Needs into Transformation

Second, a focus on citizen-centric services is proving essential for successful digital transformation. Public services shaped by ongoing citizen engagement and based on real-life challenges tend to achieve greater adoption, usability, and trust. Transformation efforts anchored in usability and user experience consistently achieve higher adoption rates and satisfaction.

> "Technology should be empathetic; its development must start by keeping in mind the needs of the citizens. Services that are informed by real-world pain points and developed based on citizen-centric design principles and through continuous engagement with citizens using channels such as surveys, social media, and feedback around life-events are far more likely to gain traction and deliver meaning outcomes."
>
> **– Dr. Akram Awad, Managing Director and Partner, BCG**

Effective digital transformation requires more than just technology—it demands active citizen participation. Cities that prioritize listening to their residents and aligning services with real needs are realizing more impactful and lasting results.

For instance, in **Al Madinah, Kingdom of Saudi Arabia** (KSA), the digital transformation effort began not with the technology selection but with a structured effort to identify real-world challenges. City departments worked closely with community stakeholders to

1. Microsoft, Consider it done: How TAMM is transforming government services in Abu Dhabi with AI, published February 6, 2025

systematically map out pain points, such as traffic bottlenecks, service delays, and visitor crowd management, and used surveys and workshops to validate the design of digital solutions. This ensured that digital initiatives were rooted in citizens' real experiences.

A similar commitment to an inclusive engagement session was seen in Timisoara, Romania, where the city leadership convened over 400 stakeholders, including citizens, local businesses, and experts, to co-design various initiatives. These efforts resulted in the development of a municipal identity platform, a smart city mobile app, and bundled digital services around major life events. The collaborative process helped build shared ownership, ensuring that services met community expectations.

In Dubai, UAE, the city launched the "Smart Majlis" platform to create a direct, digital channel between residents and the city leadership. This tool enables citizens to share ideas, submit feedback, and raise concerns, strengthening transparency and fostering a more responsive form of governance.

Meanwhile, **Al Karak, Jordan,** utilized public surveys and social media channels to tailor digital service offerings. By gathering and integrating citizen feedback, the city enhanced service relevance and improved public trust in digital initiatives.
Across all these cases, a clear pattern emerges when digital transformation is designed for citizens rather than simply for them; it achieves greater adoption and delivers tangible benefits. Embedding citizen input at every stage—from design to implementation—is key to driving engagement, trust and long-term success.

3.3 Fostering AI: Enhancing Urban Efficiency Responsibly

The third focus area centers on adopting AI to enhance public service efficiency and decision-making. Successful AI integration emphasizes not only technical deployment but also ethical, responsible use of AI technologies within existing systems. Cities that delay the embedding of AI into urban management may risk missing significant efficiency gains.

The integration of AI and GenAI into public service delivery is emerging as a major lever for enhancing government performance. Technologies have the potential to generate an estimated $1.75 trillion in productivity gains annually across national, state, and local governments globally by 2033[2].

> "AI will accelerate IT development through faster, more cost-efficient transformation. Cities must actively pursue AI integration strategies"
>
> **– Thilo Zelt, Managing Director and Partner, BCG**

Cities are increasingly leveraging AI to improve urban efficiency, from managing traffic congestion to detecting fraud and enhancing environmental quality. However, successful AI adoption hinges as much on responsible governance as on technical capability, particularly regarding transparency, ethics, and building public trust[2].

For instance, **Amsterdam, Netherlands,** embraced AI to enhance operational efficiency by deploying machine learning tools to detect illegal vacation rentals. This initiative has significantly reduced investigation times, allowing inspectors to focus on high-risk cases, improve resource allocation, and reduce administrative burdens. Recognizing broader public concerns about AI, Amsterdam proactively introduced policies around transparency and accountability to address concerns related to privacy, algorithmic bias, and opacity, reinforcing public trust alongside operational gains.

2. BCG, Generative AI for the Public Sector: From Opportunities to Value, November 30, 2023

Similarly, **Dubai, UAE**, applied AI to its traffic management system to address growing congestion and safety concerns. Authorities implemented predictive, adaptive control strategies that go beyond traditional traffic signals. At the same time, Dubai established ethical frameworks to ensure that AI deployment remained transparent and citizen-trusted, reflecting the city's broader digital governance priorities.

In **Vilnius, Lithuania, AI** is being used to enhance environmental health. The city introduced real-time AI-powered air quality sensors that detect pollution hotspots and integrate traffic data. This allowed Vilnius to transition from reactive to proactive air quality management, enabling dynamic adjustments to traffic flows and contributing to improved public well-being.

Across these examples, a consistent theme emerges: AI can drive efficiency and innovation across urban systems when deployed responsibly. Cities that align AI implementation with principles of transparency, ethics, and inclusiveness are most likely to build public trust and achieve long-term impact.

3.4 Monetizing Data and Digital Services: Funding Digital Transformation Sustainably

As cities progress in their digital journeys, an important trend is the monetization of data and digital services. Cities are increasingly treating data as a strategic asset—selling anonymized datasets, offering institutional digital services to neighboring cities, and creating recurring revenue streams that help fund ongoing initiatives. This investor-minded approach enables cities to scale services sustainably and support broader transformation goals.

For example, **Aswan, Egypt,** has developed a fee-for-service model that draws on its expertise in infrastructure development. The city provides digital systems and Geographic Information Systems (GIS) services to neighboring municipalities, generating revenue streams that are reinvested into Aswan's own digital initiatives. By leveraging local capabilities beyond their own jurisdiction, the city supports its growth while contributing to regional development.

Copenhagen: Monetizing Mobility Data for Digital Transformation

Copenhagen has taken a strategic approach to leveraging data as a revenue-generating asset in support of its digital transformation agenda. Facing growing pressures to reduce traffic congestion, lower emissions, and improve urban mobility, the city partnered with Hitachi to develop the City Data Exchange (CDE)—a data marketplace to monetize traffic and mobility data responsibly. A strong privacy safeguard was embedded into the platform from the outset, allowing only fully anonymized datasets. Through the CDE, the city shares mobility and traffic data with private firms and startups under a subscription-based model, offering insights for planning, operations, and innovation across multiple sectors. The model not only reduced dependence on public budgets but also generated direct revenue that could be reinvested into enhancing Copenhagen's digital infrastructure.

The impact has been both financial and operational. By monetizing and managing its data assets responsibly, Copenhagen was able to fund parts of its digital transformation and fuel innovation while supporting broader city objectives.

3.5 Upskilling Local Talents: Building Future-ready Digital Workforces

As cities accelerate digital transformation efforts, the demand for digitally fluent workforces is sharply rising. Swiftly addressing skill gaps has become essential for ensuring that cities can support emerging technologies and service models. Building and reskilling local capabilities is key to sustaining momentum and ensuring long-term digital resilience.

For example, **Dubai, UAE,** offers an example of investing in digital skills development at scale. Through its "One Million Arab Coders" initiative, the city set out not only to cultivate digital talent but also to have a broader regional impact across the Arabic-speaking world. By investing in the technical education of individuals, the city is laying a strong foundation for future-ready governance and economic opportunity. To date, over one million participants across the region have enrolled in the program, with many earning Nanodegree certifications that enhance their employment prospects.

Barcelona: Developing Digital Talent Through a Coordinated Upskilling Program

A more localized but equally coordinated approach is seen in Barcelona, Spain, where the city launched the Barcelona Digital Talent (BDT) program. The initiative aimed to grow and diversify the city's tech workforce by preparing residents for careers in emerging digital fields. BDT adopted a holistic strategy that included a centralized learning platform, outreach campaigns, and structured career pathways.

Through a combination of training bootcamps, many offered free or at subsidized rates, participants were trained in high-demand digital skills. In addition, BDT has awarded over 700 scholarships to support specialized digital education through local academic institutions. To enhance employment outcomes, Barcelona introduced a mentorship and career-matching system that connected job seekers with experienced professionals alongside networking events, job fairs, and an online job board.

The results have been substantial. By 2021, Barcelona accounted for 95% of digital and tech job openings in Catalonia. By 2022, more than 5,000 individuals had been reskilled, and the city's digital workforce was growing at an average annual rate of 12%[3].

A key factor in BDT's success was the role of the city government as convener and coordinator, aligning universities, training institutions, and private sector employers under a shared vision. By integrating career guidance, mentorship, and employer engagement into one coordinated strategy, Barcelona strengthened both talent outcomes and employment pathways.

3. Mobile World Capital Barcelona, Digital Talent Overview 2024, June 2024

3.6 KPIs for Performance Tracking: Translating Strategy into Measurable Results

Finally, performance tracking through key performance indicators (KPIs) is essential for translating digital strategies into measurable outcomes. By defining clear, outcome-oriented metrics, cities can monitor progress, evaluate impact, and link digital initiatives to tangible social returns on investment (SROI) and improvements in quality of life (QoL).

As digital transformation efforts advance, measuring progress effectively becomes essential. Tracking the right metrics enables leaders to evaluate what's working, identify areas for improvement, and ensure digital initiatives are delivering real impact for residents.

Dubai, UAE, places citizen satisfaction at the center of its performance framework. The city introduced the Happiness Meter, a feedback tool that captures user sentiment immediately after government service interactions. Residents are asked to rate their experience, creating a continuous data stream that informs improvements. With a reported satisfaction rate of 93.8%[3] and a trust score of 95%[4], the initiative exemplifies how real-time feedback can drive both service quality and public confidence.

In Tallinn, Estonia, performance management focuses on both adoption and user experience. The city tracks the uptake of digital services—such as the proportion of residents using e-services—as well as the quality of user experience, informed by satisfaction surveys and usability metrics. This ensures that services are not only accessible, but also intuitive, reliable and user-friendly.

Together, these six focus areas form a practical roadmap for cities aiming to scale their digital transformation initiatives while maintaining focus on citizen needs, operational efficiency, and long-term sustainability.

4. Advancing the Agenda: Way Forward

Drawing on the challenges identified, and insights gathered through expert consultations and city interviews, six key recommendations have emerged to guide digital transformation efforts. These recommendations offer a practical roadmap for accelerating progress while ensuring inclusivity, transparency, and long-term sustainability.

4.1 Strengthen Cross-government Collaboration

Cities can foster inter-departmental cooperation by enabling shared digital platforms and encouraging data exchange. A unified, integrated approach to service delivery—often described as a "one government" mindset—can help overcome fragmentation and drive more consistent outcomes across agencies.

Key Actions:

- Consolidate fragmented digital tools into a centralized platform to improve interoperability and ensure consistent user experiences.
- Establish a citywide digital leadership function or committee to ensure coordination across departments.
- Foster ecosystem-wide collaboration by connecting government, academia, the private sector and civil society.

3. Mobile World Capital Barcelona, Digital Talent Overview 2024, June 2024
4. Digital Dubai, Happiness Meter, April 2024

4.2 Build Citizen-centric Services

Embedding resident input into digital service design is critical for ensuring relevance, trust, and adoption. Cities are encouraged to involve communities in identifying key pain points and to integrate their feedback.

Key Actions:

- Design digital services by engaging residents consistently to identify pain points, understand their priorities in order to shape relevant solutions.
- Enable real-time citizen feedback and suggestions into digital services through participatory platforms to support continuous engagement.

4.3 Integrate AI Responsibly

Early and strategic adoption of AI can enhance efficiency across city functions. Cities can pair domain expertise with algorithmic insights and implement transparent frameworks to manage bias and build public confidence in AI-driven services.

Key Actions:

- Accelerate adoption of AI and GenAI technologies to enhance targeted service delivery, predictive planning, and citizen engagement.
- Establish clear and transparent AI governance frameworks to guide responsible use, build public trust, and promote accountability across government departments.

4.4 Monetize Data and Digital Services

Cities can generate sustainable revenue streams by responsibly monetizing anonymized datasets and offering digital services to neighboring municipalities. This can help in funding transformation while extending value beyond city boundaries.

Key Actions:

- Monetize anonymized city data responsibly, with strong safeguards for privacy, equity, and public trust.
- Offer digital services and technical expertise to other municipalities to generate additional city revenue.
- Reinvest digital revenues into improving digital inclusion and service innovation.

4.5. Invest in Upskilling Local Talents

Equipping the workforce with digital skills requires more than technical training. Cities can combine career support with accessible learning pathways, engaging academic institutions as key partners, and play a convening role in aligning training ecosystems with evolving labor market needs.

Key Actions:

- Implement structured upskilling programs supported by scholarships, mentorship programs and defined career pathways to cultivate and retain digital talent.
- Partner with universities and the private sector to co-develop tailored programs and offer short-term fellowships or exchange opportunities with industry experts.

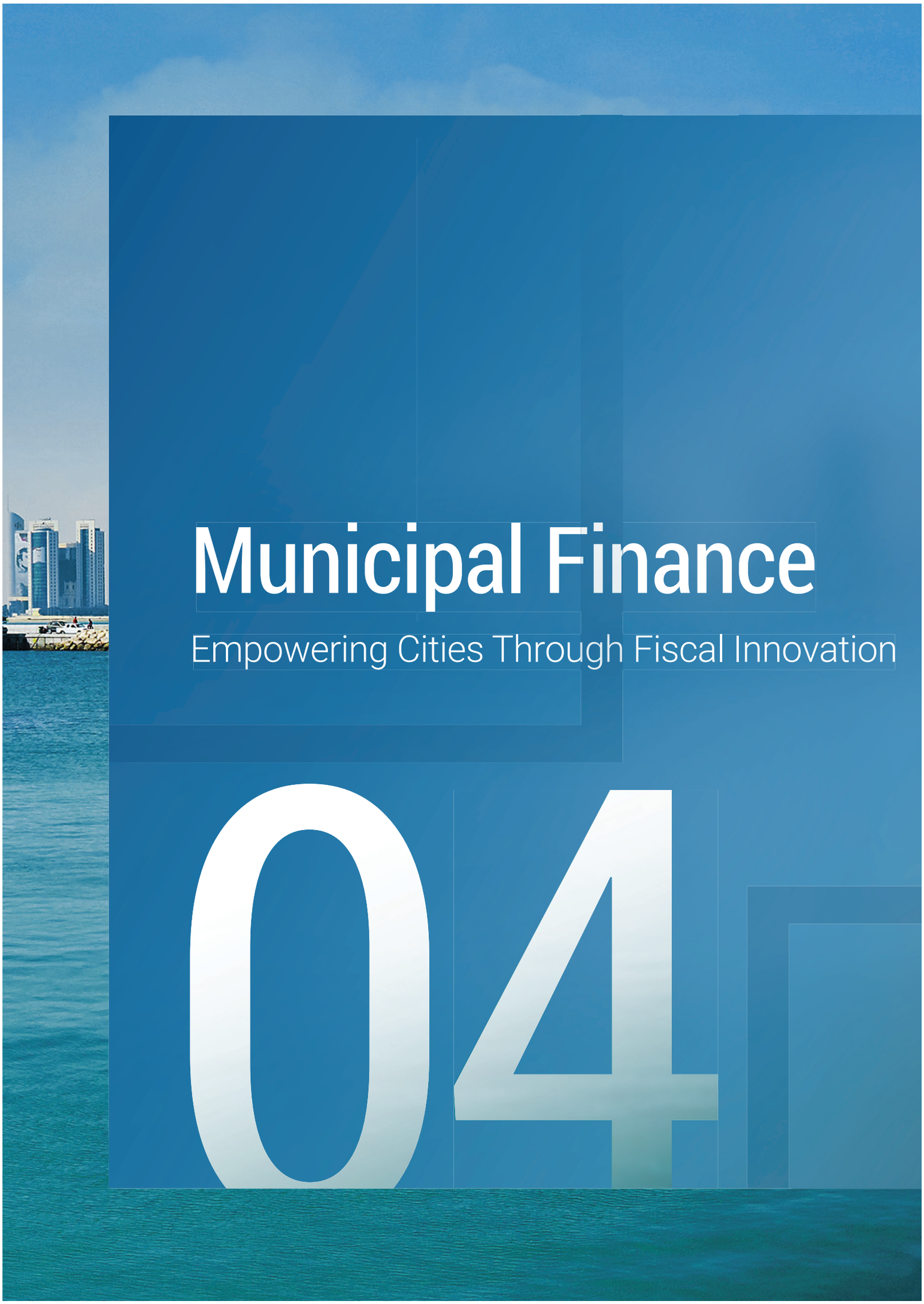
4.6 Track the Right Metrics

To translate digital initiatives into measurable public value, cities can look at prioritizing both people-centric indicators, such as satisfaction rates, alongside technical performance metrics. Publishing results and incorporating feedback builds transparency and reinforces resident trust.

Key Actions:

- Track both system-level metrics (e.g., uptime, efficiency) and user-focused indicators (e.g., usage, satisfaction, trust level) to measure the impact of digital services.
- Regularly publish performance data through dashboards and reports to promote transparency and build public accountability.

Together, these six recommendations form a cohesive strategy for cities aiming to advance and navigate their digital transformation with purpose and impact.



Municipal Finance

Empowering Cities Through Fiscal Innovation

04

04 Municipal Finance: Empowering Cities Through Fiscal Innovation

Municipal finance refers to the way local governments raise, manage, and spend public funds to deliver services, build infrastructure, and plan for long-term development. It shapes the everyday capabilities of cities—from maintaining roads and lighting streets to expanding public transit and investing in climate resilience. As cities grow in size and responsibility, the systems that underpin their finances are being tested. Many municipalities are expected to respond to increasing service demands with limited control over revenue, fragmented funding, and rising costs. Yet despite these constraints, cities continue to play a central role in driving economic growth, social inclusion, and sustainability—often with constrained financial tools.

This chapter explores three core themes shaping the future of municipal finance. First, it highlights the scale of investment required to meet the rising demands of urban development—particularly in infrastructure, public services, and climate adaptation. Second, it examines the structural constraints that continue to limit the financial agility of cities, including rigid intergovernmental transfers, limited revenue authority, and fragmented planning frameworks. Finally, it presents a set of emerging strategies—such as performance-based budgeting, public-private partnerships, and land value capture—that cities are adopting to strengthen fiscal resilience and enable long-term, inclusive growth. Together, these themes underscore the central role of municipal finance in shaping sustainable urban futures.

1. The Urban Finance Gap: A Growing Risk to Sustainable Cities

Over the next 15 years, an estimated $93 trillion in infrastructure investment will be needed globally, with nearly 70% of this demand concentrated in cities[1]. This translates to roughly >3.5% of global GDP annually just to keep pace with projected urban growth[2].

At the same time, cities are expected to provide and maintain a broad portfolio of services and infrastructure, critical to creating safe, inclusive, and vibrant urban environments. Yet many operate with limited fiscal autonomy, often constrained by centralized national systems. Globally, local governments manage less than 20% of public expenditure[3], with key financial levers—such as tax setting authority, budget control, major grant allocations—largely retained at the national level.

As a result, most municipalities rely heavily on intergovernmental transfers and external grants. While essential, these funding streams are often earmarked for specific uses or tied to rigid timelines, limiting cities' ability to adapt to evolving local needs. For instance, investments supported by the European Union's (EU) Modernization Fund require financial activity to be reported every two years and fully utilized within five years. Failure to meet these timelines risks discontinuation of funding, jeopardizing the continuity of modernization projects and the broader development goals they support.

At the same time, decentralization has expanded local mandates without a corresponding increase in fiscal authority. Cities are expected to deliver more services, but most do so with stagnant resources and an increasing dependence on national allocations. As a result, local governments are operating in a financial environment where growing demands are met with limited tools and constrained budgets.

1. United Nations, Secretary-General's Climate Action Summit, published May 31, 2019
2. Global Infrastructure Hub, Global infra investment need to reach $97 trillion by 2040, published July 25, 2017
3. Centre for Public Administration Research (KDZ), European Local Government Finances and Local Autonomy

> Sofia is home to nearly two million people—around 25–30% of Bulgaria's population—and contributes more than 45% of the national GDP. Yet, we operate without real financial decentralization. Our city budget is allocated by the central government and remains among the lowest per capita compared to other municipalities. Given Sofia's economic contribution and growing urban pressures, we would need nearly double our current budget to meet the city's development and service demands."
>
> **– Nikola Barbutov, Sofia Deputy Mayor**

This mismatch between responsibility and resources carries direct and far-reaching consequences. In the short term, limited funding leads to project delays, legal disputes, and disruptions in service delivery. Over the medium term, cities risk diminished credit ratings, reduced attractiveness to private investors, and constrained institutional capacity. In the long term, persistent fiscal gaps can delay the implementation of strategic infrastructure, weaken urban competitiveness, and hinder inclusive development.

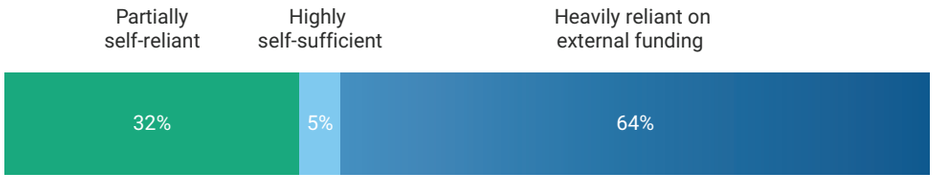
As cities continue to grow in scale and complexity, strengthening municipal finance is no longer just a technical matter—it is foundational to delivering sustainable urban futures.

2. Building Financial Resilience: How Cities are Responding to Rising Fiscal Pressure

2.1. Understanding the Key Constraints in Municipal Finance

Recent insights from the Cities Survey 2025 highlight the evolving financial pressures faced by city governments. A striking finding is that more than 70% of the surveyed cities remain heavily dependent on national and foreign grants as their primary source of funding. While such grants are critical for supporting core public services, their unpredictability and rigid conditions make long-term financial planning an increasingly difficult issue which is expected to worsen with the withdrawal of United States Agency for International Development (USAID) support. Meanwhile, the cost of urban service delivery continues to rise, but grant transfers have not kept pace, leaving cities increasingly exposed to mounting liabilities and fiscal stress.

Exhibit 26: National and foreign grants dominate the city budget, posing growing risks



>70% of the cities have national grants and foreign grants as their main source of funds

Aid cuts by US, UK (−40%), and likely France (~−30%) will adversely impact recipients such as Jordan, Egypt, and Ukraine

Private funding though desired, continues to form a very low percentage of the overall pie

Dependence on external grants and loans is likely to continue as cities highlight limited tax revenues, mounting liabilities due to increasing cost of services as the main concern

Source: Cities Survey 2025

For instance, in Birmingham, central government grants declined by 40% in real terms over a decade[4]—contributing to the city's declaration of bankruptcy, with immediate consequences for local services and employment. Similarly, Belfast's planned redevelopment of Casement Park Stadium was stalled due to escalating costs and a lack of additional government funding. The project's budget escalated from £77.5 million to over £400 million[5] , ultimately resulting in the city's removal from the list of UEFA Euro 2028 host venues — a stark reminder of how financial shortfalls can derail strategic urban ambitions.

In parallel, cities operating under centralized fiscal models face internal constraints that hinder their ability to respond to changing needs. For example, Jeddah's municipal budget is determined through a national allocation system based on pre-approved project submissions. This process restricts the city's flexibility to address quickly emerging urban challenges—particularly as service costs rise and population growth accelerates.

2.2 How Cities are Responding: Strategies for Fiscal Resilience

Yet despite these funding constraints, most cities continue to bear a substantial share of service delivery responsibilities. According to the survey, over 45% of municipalities still develop and manage projects end-to-end. This illustrates an ongoing mismatch between fiscal autonomy and functional responsibility, reinforcing the need for more flexible and diversified financing models.

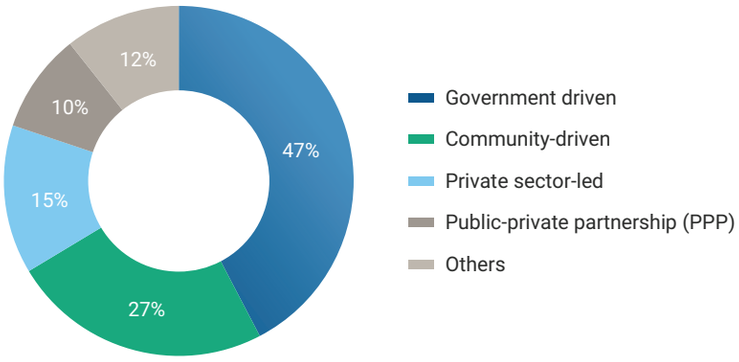
In response, many city governments are adopting hybrid models of service delivery. Approximately 45% of survey respondents expressed a preference for selectively monetizing or privatizing municipal services—a shift driven by the need to share financial risk, attract private capital, and improve service quality.

Furthermore, nearly 20% of cities reported adopting performance-based budgeting, signaling a growing emphasis on outcomes, accountability and long-term fiscal sustainability.

4. Institute for Government, Local Government Funding in England, March 10, 2020
5. BBC, What went wrong with the Casement Park project?, September 14, 2024

Exhibit 27: 47% of Urban projects are still government-led, but Hybrid models are gaining ground

Project execution mechanism



~50% of the respondents mentioned need based allocation as the primary basis of allocating funds; followed by performance-based budgeting at 20%

45% of the respondents mentioned a move towards a more hybrid approach of providing services (selectively monetizing/privatizing municipal services)

~18% mentioned greater privatization as their long-term strategy

Source: Cities Survey 2025

The survey also identified the top five strategies municipal leaders view as most effective for strengthening the financial health of city councils:

- Implementing cost-saving measures
- Enhancing public-private partnership (PPPs)
- Expanding local revenue sources
- Securing international funding
- Monetizing public assets

3. From Constraints to Solutions: A New Agenda for City Finance

Cities are beginning to rethink the fundamentals of municipal finance to meet growing demands. Through interviews with city practitioners, expert consultations, and survey data, a set of emerging best practices has been identified to guide local authorities in strengthening their financial systems. Organized into four priority areas, these practices reflect a clear shift in mindset —from managing scarcity to enabling impact. These areas are: effective budgeting, revenue generation and financial independence, asset optimization for capital mobilization, and strategic alignment with external funding partners. Each represents a pathway towards a more agile, resilient, and accountable municipal finance.

As cities face rising construction costs, escalating climate risks, and growing urban density, financial resilience will depend on budget reprioritization and partnering with the private sector to absorb shocks and build long-term buffers.

- Christian Oussi, Managing Director and Partner, BCG

Exhibit 28: Summary of main priorities to address fiscal stress

Priority (Based on survey ranks)	Strategies identified from survey	Recommendations based on best practices	City Examples
Effective Budgeting	Digital solutions ranked high for improving transparency, control, and performance in budgeting	• Scale digital budgeting platforms • Institutionalize performance-based budgeting • Engage with cities on impact	**Istanbul:** Digital system enhancing municipal budgeting and data integration. **Sofia:** Prioritizes projects that give maximum returns to the city
Revenue Generation and Financial Independence	Cities identified PPPs and enhanced local revenue streams as the top strategies to stabilize	• Expand municipal-owned ventures for steady income • Develop sector-specific PPP pipelines • Establish land value capture (LVC) models as recurring local revenue sources	**Jeddah:** Leveraging PPPs and private investments (Furas platform) **Istanbul:** City-owned ventures (9% revenue) **Tangier:** Leveraged PPP to boost the local economy **Sofia:** Established "Sandbox for Innovative Solutions" to fund start-ups that propose solutions to address municipal problems
Asset Optimization for Capital Mobilization	Unlocking land value is a key driver for funding infrastructure and attracting private capital	• Package and release underutilized land • Create professionalized urban asset management model	**London:** Government Property Agency monetized an under-utilized public war building by selling it to a private developer
Alignment with external funding partners		• Align local priorities with regional goals • Build joint partnerships across cities to unlock scale • Strengthen institutional capacity to absorb earmarked funds	**Padua & National Recovery Plan** for implementing administrative reforms and developing infrastructure **Lisbon and Porto,** Portugal for enhancing their public transport

Sources: Global CIO; IMM Investor Presentation; Tangier Med; European Investment Bank

The following paragraphs provide a detailed overview of each initiative, outlining key practices and insights that cities can adopt to strengthen their financial systems.

4. Effective Budgeting

As city leaders seek to maximize limited resources, the ability to design budgets that generate higher returns on public spending is becoming a key differentiator. Two complementary strategies are gaining momentum: performance-based budgeting and structured citizen engagement. Together, these approaches are helping cities prioritize impact, build public trust, and shift from reactive planning to proactive investment.

Cities can unlock major efficiency gains through better planning and digital adoption — from coordinated procurement to predictive maintenance powered by AI.

- Christian Oussi, Managing Director and Partner, BCG

4.1 Performance-based Budgeting: Driving Efficiency Through Impact

As cities face tighter fiscal conditions, performance-based budgeting is gaining traction as a practical tool for aligning financial resources with measurable results. Rather than allocating funds based solely on historical trends or political cycles, this approach prioritizes projects and services that demonstrate clear impact and efficiency. It enables cities to better track the return on investment of public spending and fosters a more transparent, data-driven budgeting culture. Cities across different regions have begun integrating performance metrics into their planning processes—linking disbursements to environmental, operational, or social outcomes. In the following examples, Sofia and Dubai offer two distinct but equally compelling models.

Sofia's Formula for Smarter Spending

Sofia, in Bulgaria, is setting a strong example in performance-based budgeting by directly linking financial decisions to measurable outcomes. The city prioritized retrofit projects with the highest projected energy savings and payback periods of under five years, resulting in the upgrade of 26 municipal buildings. These improvements reduced energy consumption in schools by 30–50%[6] and unlocked BGN 6.3 million in EU grants[7].

A standout innovation is Sofia's approach to surplus management: end-of-year savings are reinvested in top-performing sectors, reinforcing a culture of efficiency. The same model was applied to transit investments, using milestone-based funding to expand Metro Line 3—boosting daily ridership by >95,000 and reducing annual CO_2 emissions by 90,000 tons[8].

6. Balkan Green Energy News, Sofia boosting energy efficiency in schools, kindergartens, published June 19, 2016
7. National Trust Eco Fund, Energy Efficiency of Municipal Schools and Kindergartens
8. European Commission, Bulgaria's capital expands metro network, reducing congestion and benefiting travellers, published on January 19, 2017

Dubai's Performance-Driven Approach to PPPs

The emirate of Dubai offers another compelling example. Using a performance-linked PPP model, the city developed the Dubai Waste Management Centre, where operator payments are tied directly to environmental outcomes. In parallel, Dubai has implemented digital asset tracking and budget monitoring systems, enabling more strategic capital deployment and supporting a projected 21% budget surplus for 2025–2027[9]. This data-driven model is positioning the city as a regional benchmark for smart financial governance.

4.2 Transparency and Citizen Engagement: Making Budgets More Responsive

Cities are also realizing the value of involving residents more directly in budget decisions. Citizen engagement frameworks—ranging from participatory consultations to real-time feedback tools—are helping governments build trust and align spending with local needs. Dubai offers a strong example: Its participatory budgeting model combines structured public input with digital tools such as an open budget portal and the citywide "Happiness Meter" system[10]. These feedback mechanisms, regularly reviewed by the Executive Council, directly shape planning and spending decisions.

Riga's Local Lens on Budgeting

Riga, in Latvia, has transformed citizen engagement by bringing budgeting closer to the community. Through its Neighborhood Residents Centres, the city established five territorial hubs serving 58 neighborhoods as one-stop agencies. These hubs empower citizens to directly raise and shape local priorities, with coordinators ensuring ideas are translated into specific action. This model delivers both responsiveness and efficiency without requiring an additional budget. Instead, Riga leveraged existing structures to increase civic participation, build trust, and accelerate local problem-solving. It's a decentralized approach that makes municipal budgeting not only more transparent, but deeply personal.

Taken together, these strategies point to a broader shift—from static budget planning to adaptive, impact-driven financial governance, anchored in performance and guided by the communities.

9. Zawya, Dubai approves 2025-27 budget with $74bln in expenditures, published October 29, 2024
10. Emirates News Agency (WAM), "Dubai Smart Government has officially activated "Happiness Meter" in 14 government entities so far" published April 21, 2015

4.3. Revenue Generation and Financial Independence

To reduce reliance on unpredictable grants and expand long-term fiscal capacity, many local governments are exploring ways to generate their own revenue and share financial risk. Three levers are emerging as key to this shift: adopting a business mindset, leveraging public-private partnerships, and implementing Land Value Capture (LVC).

4.4 Business Mindset: Operating with Enterprise Principles

Cities are increasingly positioning themselves not only as service providers but also as economic actors—launching city-owned ventures and leveraging municipal subsidiaries to drive revenue and efficiency.

Istanbul exemplifies this approach by operating 30 municipal enterprises across core sectors such as transport and energy. These subsidiaries now account for 14% of the city's total revenue and are ranked among Turkey's top-performing companies.

Sofia's Innovation Sandbox: Local Ideas, Public Impact

Sofia has launched a municipal innovation sandbox that funds startups to address real urban challenges—without taking equity. The city provides early-stage capital, testing environments, and a rigorous selection process based on more than 50 Key Performance Indicators (KPIs).

One notable success is the Kinari Air Quality Monitoring System, now active in kindergartens, offering real-time alerts and faster health responses. As other cities explore adoption, Sofia is also emerging as a startup hub—home to 88% of Bulgaria's startups and ranked 23rd in Europe[11].

Sofia's approach shows that cities don't need large budgets to drive innovation. By backing targeted, high-impact solutions from within the ecosystem, municipalities can improve services and spark economic activity—at scale and with speed.

4.5 Public-Private Partnerships: Unlocking Capital and Expertise

To co-finance infrastructure and scale service delivery, many municipalities are turning to partnerships with the private sector. These arrangements help reduce upfront public costs while enhancing innovation and operational efficiency.

While PPPs offer strong potential for cities seeking to mobilize capital and tap into private sector expertise, their success depends on more than the project itself. Across our research, five enabling principles consistently emerged, each critical to making PPPs bankable, resilient, and aligned with urban priorities. These principles are presented below, each illustrated by a city example that demonstrates its feasibility.

- **Strategic Importance of the Asset**

PPPs are most effective when the underlying asset is integral to a city's long-term strategy—whether in infrastructure, resilience, or public welfare. This alignment helps ensure continuity across political cycles and strengthens project viability.

11. Recursive, Bulgaria Ranks 37th Globally in Startup Ecosystem, with Sofia as a Key Hub, February

Madrid's PPP Model: Scaling Housing with Social Impact

Madrid is using PPPs not just to expand housing supply, but to strategically rebalance urban growth. Confronted with a housing shortage amid rapid economic expansion, the city launched an ambitious plan: leverage private capital through long-term concessions to deliver more than 15,000 affordable housing units—68% of which are subsidized.

By aligning social welfare goals with investment incentives, Madrid accelerated housing delivery by over 500% year-on-year and shielded the market from speculation. The €400 million Plan VIVE grants private partners 50-year development and management rights, ensuring long-term affordability and scale[12].

Madrid's approach proves that inclusive growth and financial pragmatism are not mutually exclusive. With the right structure, PPPs can align private returns with public value—making housing both a policy instrument and an economic driver.

- **Scale and Capital Requirements**

Large-scale projects offer economies of scale and more predictable revenue streams—both essential factors for attracting institutional investors. Moreover, bundling projects into a coherent pipeline reduces transaction costs and signals commitment from city leadership.

Riyadh's deployment of nearly 1,000 buses through a PPP was made possible by the city's scale and clear ridership projections, which gave the private consortium the confidence to invest in high-capacity transport infrastructure[13].

- **Innovation and Technical Complexity**

Projects that demand operational efficiency or sector-specific expertise benefit from private partners who bring innovation and delivery experience.

The Dubai Waste Management Centre in Warsan, structured as a performance-based PPP, exemplifies this principle. The operator is paid per megawatt-hour of electricity generated, but only if environmental targets are achieved, aligning payment with both innovation and efficiency.

- **Commercialization and Revenue Potential**

Projects with self-sustaining revenue models reduce the need for public subsidies and improve bankability. Fare collection systems, advertising rights, leasing opportunities, and other revenue streams help create win-win structures for cities and private partners.

A strong example of this is observed in Paris, where the city's Vélib' bike-sharing system was developed through a PPP with JCDecaux. the company financed and operated the fleet in exchange for exclusive advertising rights—demonstrating how commercialization potential can drive innovation in public services[14].

12. CRE Herald, Ares to develop over 3,600 affordable rental residential units in Madrid, published October 29, 2021
13. Arab News; MEED
14. IBS Center for Management Research, Velib: Paris's Public Bike Sharing System, published In 2010

"Establishing clear, fixed decisions early- and ensuring they remain stable despite shifts in government or economic conditions- is critical to the long term success of PPP projects"

- Antoine Vetrano, Principal, BCG

- **Market Maturity and Government Readiness**

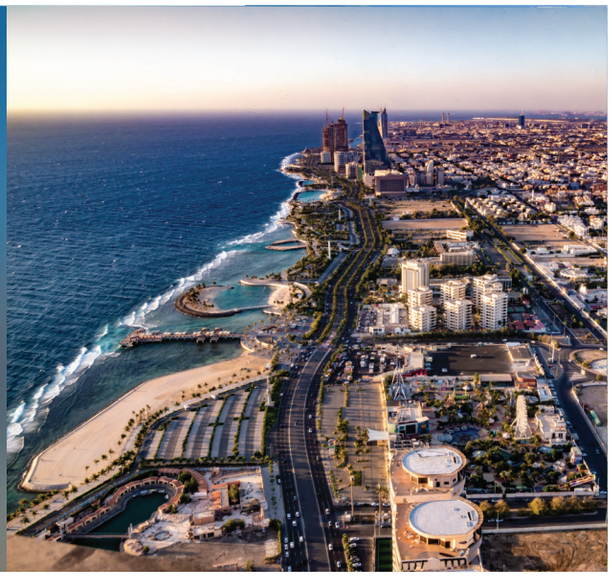
A city's institutional capacity to manage partnerships, including transparent procurement, policy continuity, and a clear legal framework, is essential for attracting private investment.

Jeddah's Digital Gateway to Urban Investment

Jeddah is turning transparency into a competitive advantage. Through the national Foras platform, the city has institutionalized a fully digital, end-to-end process for marketing public land—making investment opportunities visible, credible, and accessible.

Jeddah has over 150 opportunities listed on the portal, but the process is consistent: clear rules, digital tenders, and well-defined municipal terms[15].

Jeddah demonstrates that government readiness is not an abstract concept—it's a system. By making land assets market-ready through a transparent, tech-enabled pipeline, cities can unlock idle capital, attract committed investors, and turn land value into long-term fiscal strength.



Together, these five principles not only guide successful PPP structuring but also support broader governance reforms. By aligning purpose, capacity, and opportunity, cities can convert partnerships into enduring levers of financial resilience and service transformation.

4.5.1 Land Value Capture (LVC): Monetizing Public-led Growth

Urban infrastructure and regulatory decisions often lead to increased private land values—driven not by private investment, but by public action. LVC provides a suite of tools that enable cities to reclaim part of this added value and reinvest it into critical infrastructure and public services. At its core, LVC ensures that the value created through public interventions is not fully privatized but instead redirected toward collective urban development. According to the Cities Survey 2025, nearly 50% of cities are either implementing or actively exploring LVC as a strategic financial tool.

Cities have adopted a variety of mechanisms to implement LVC strategies, including:

- **Developer Obligations (Exactions):** Upfront fees or in-kind contributions required from developers, tied to zoning permissions or infrastructure needs.
- **Betterment Levies:** Charges imposed on landowners based on increases in property value resulting from public improvements.

15. Furas, MOMAH, as on May 2, 2025

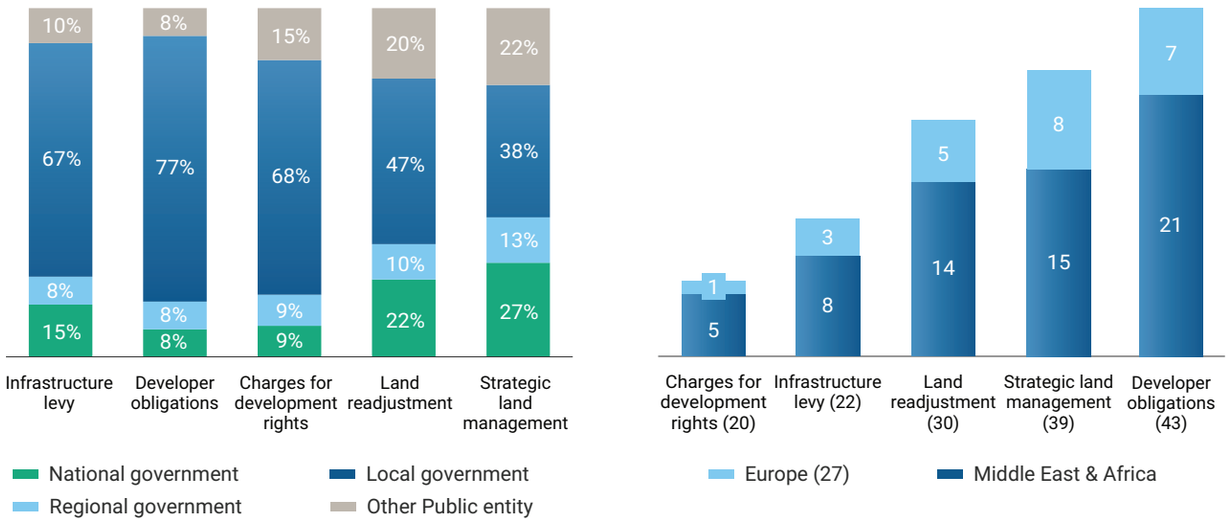
- **Charges for Development Rights:** Payments made by developers in exchange for additional building capacity or Floor Area Ratio (FAR).
- **Land Readjustment and Pooling:** Reconfiguring and consolidating parcels, then redistributing them with improved infrastructure.
- **Tax Increment Financing (TIF):** Borrowing against projected future increases in property tax revenues within designated development areas.

Among these, developer obligations have emerged as the most widely used and rapidly scalable LVC tool—preferred for their administrative simplicity, clear legal basis, and immediate alignment with the development process (See Exhibit 29).

Cities like Amman, Dortmund, and Toulouse have already deployed developer obligations to meet social goals such as expanding affordable housing and increasing municipal revenue streams.

Exhibit 29: Developer Obligations Dominate City-Level LVC…

Implementation patterns reflect both decentralization and ease-of-use. Local governments lead on tools with fast returns and simple triggers



Source: OECD

Exhibit 30: …primarily because they're clear, fast, and simple to administer

	Developer Obligations	Betterment Levies	Tax Incremental Financing	Land Readjustment
Type of Project	New Development (or increasing development density)	Development in built-up areas	Development in built-up areas	New Development
Originator by sector	Private	Public for infrastructure	Public for infrastructure	Private
Scope of capture	Land value capture	Cost recovery	Cost recovery	Land value capture
Timing of resource availability	Before the project starts (upfront)	After project completion	Before the project starts (based on future tax gains)	Before or during the project (from landowners)
Ease of implementation	**Low complexity**	Political dependency	Complex administration	High legal framework
	Clear upfront requirements	Broad public acceptance required	Complex forecasting required	Extensive negotiations and long term planning required

Developer Obligations stand out as the easiest-to-implement land value capture instrument due to clear, straightforward requirements, immediate benefits, and minimal administrative complexity compared to alternatives

Source: OECD: BCG Analysis

Based on successful applications across diverse contexts, five principles have emerged as critical to the effective implementation of LVC:

- **Alignment with Strategic Urban Plans:** LVC can be embedded within the city's long-term development strategy.
- **Legal and Regulatory Clarity:** Clear frameworks are essential to define when and how value will be captured.
- **Administrative Simplicity:** Implementation is recommended to straightforward and enforceable at the local level.
- **Transparency and Fairness:** Ideally, stakeholders understand how charges are calculated and used.
- **Local Control and Flexibility:** LVC mechanisms are most effective when managed by municipal authorities who understand the local context.

Land value capture is more than a financing solution—it is a governance instrument that reinforces the social contract between cities and their residents. When implemented effectively, it ensures that urban development generates shared prosperity and that public investments remain fiscally sustainable over time.

4.6 Asset Optimization for Capital Mobilization

Many cities own extensive portfolios of public assets, ranging from real estate to service-generating infrastructure; yet a significant share of these assets remains underutilized or financially dormant. In an era of growing fiscal constraints and increasing infrastructure demands, optimizing public asset value is becoming a strategic imperative.

Asset optimization involves identifying idle or undervalued properties, repurposing them for higher value uses, and channeling the proceeds into long-term urban priorities. Cities that embed asset management into their financial strategies not only create new revenue streams but also reduce operational costs and attract private capital for redevelopment.

Urban assets typically fall into two broad categories:

- **Real Estate Assets:** Buildings and land that can be leased, repurposed, or redeveloped. These assets are often publicly owned but frequently overlooked in fiscal planning.
- **Service-Generating Assets:** Infrastructure tied to essential services, such as roads, utilities, and financial instruments, that can be structured into revenue-generating or cost-saving models.

Five key principles have been identified for successful asset monetization:

- **Align with Strategic Priorities:** Asset strategies can reflect the city's broader development mandate—prioritizing projects that deliver both financial returns and public value.
- **Commercialize Prime Properties:** Cities can proactively monetize centrally located or high-demand sites through leasing, joint ventures, or strategic sales.
- **Reallocate Underutilized Assets:** Misaligned or low-use properties can be redeployed for more relevant functions, improving both service delivery and fiscal efficiency.
- **Utilize or Dispose of Vacant Assets:** Idle assets increase maintenance costs and reduce financial agility. Their reuse or disposal can be fast-tracked.
- **Leverage Data and Market Analysis:** Effective monetization relies on robust asset inventories, clear valuation benchmarks, and strong investment planning tools.

Global city experiences show how these frameworks translate into tangible gains.

Exhibit 31: Cities monetizing public land to unlock capital and enable urban transformation

Reducing Fiscal Pressures	Funding Infrastructure	Attracting Investment
Athens, Greece **Commercialize prime properties** HRADF, Greece's privatization agency, entered into a 99-year sale-lease agreement with private player.The developer through upfront payment of 915 bn euros procured development rights of a prime land - Hellinikon Former Airport	Lisbon, Portugal **Align with entity mandate | & strategic priorities** Auctioned the Feira Popular fairground site, using proceeds to **fund affordable rental housing** and related urban redevelopment	Manchester, UK **Reallocate underutilized properties** Entered a joint venture with Abu Dhabi's United Group to redevelop land near Etihad Stadium — **delivering 1,500 homes and new community infrastructure**
Marseille, France **Commercialize prime properties** Launched transparent online auctions of vacant municipal properties to **cut maintenance liabilities and generate recurring revenue**	Hamburg Germany **Leverage asset database** Monetized 157 hectares of HafenCity land through structured sales; **reinvested proceeds in streets and bridges,** while drawing over €1 billion in private capital	Dubai, UAE **Commercialize prime properties** DREC partnered with private developers to transform an underutilized central urban plot into a high-value mixed-use district. **Generated USD 120M annual revenue and attracted USD 1.3B in private investment.**

These real-world examples reflect the principles cities are using to unlock value

These cases illustrate that, with the right approach, public asset management can serve as a powerful tool for easing fiscal pressure, financing urban infrastructure, and catalyzing inclusive economic growth.

4.7 Access to Regional Funds

As urban challenges grow more complex and interconnected—from climate resilience to social equity—many cities are realizing that solutions often lie beyond their own jurisdictional and fiscal boundaries. In this context, regional and international funds, such as those offered by the European Union (EU), are becoming vital sources of capital and technical support. However, access to these funds is neither automatic nor guaranteed; it requires strategic alignment, robust planning, and a demonstrated capacity for implementation.

Three key practices have emerged among cities that have successfully accessed the EU and other regional funds:

- **Strategic Alignment with Regional Goals**
  Cities can explicitly align their initiatives with broader EU priorities. This includes embedding sustainability targets (such as net-zero commitments), equity frameworks (inclusive energy transitions), and resilience indicators into their planning documents.

- **Pipeline Preparation and Project Readiness**
  Access to funding depends heavily on a city's ability to present a credible pipeline of projects. These projects can be technically sound, financially modeled, and aligned with measurable KPIs. The stronger and more mature the pipeline, the more likely it is to attract investment—not only from governments, but also from private co-financiers.

- **Transparency and Validation Mechanisms**
  Programs like the EU's Climate-Neutral Cities Mission require cities to undergo expert validation and secure certifications, such as the EU-backed climate label. This process not only ensures accountability but also builds investor confidence and unlocks opportunities for blended finance.

The benefits of accessing regional funding extend far beyond financial resources. They include:

- **Infrastructure Modernization**
  From digital transport systems to energy-efficient public buildings, EU funds have enabled major upgrades that would otherwise be unaffordable through municipal budgets alone.

- **Economic Diversification:**
  Investment in innovation ecosystems and small and medium-sized enterprises (SMEs) has created new job opportunities and accelerated local economic growth.

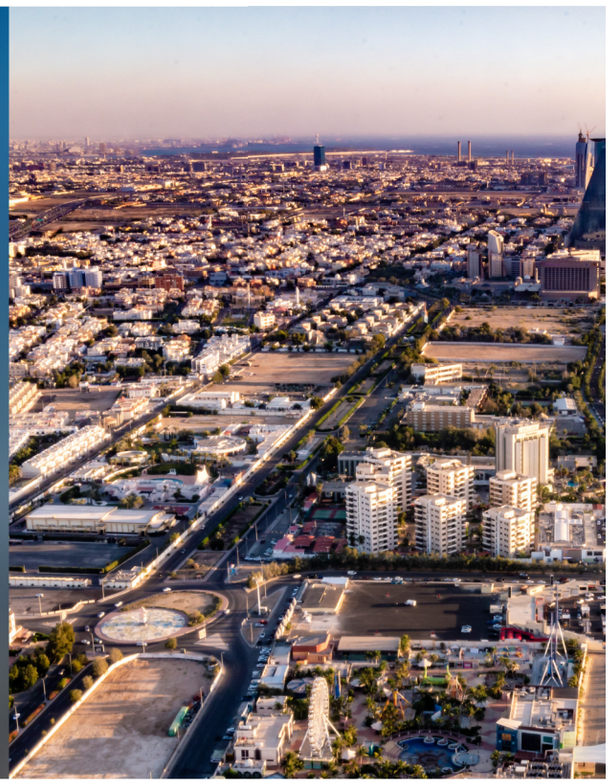
- **Social Impact**
  Programs have strengthened educational, healthcare, and community services—directly contributing to a more inclusive urban fabric.

Empowering Local Action Through Regional Capital

The EU's Climate-Neutral Cities Initiative is setting a new standard for how regional institutions can accelerate local action. With 112 cities committed to achieving net-zero emissions by 2030—far ahead of most national targets—this initiative is not just about ambition; it's about building a system cities can execute within.

Each participating city co-develops a Climate Investment Plan with EU guidance, receives validation through a climate label, and gains access to technical and financial support from the European Investment Bank. Projects are bundled into investable portfolios through platforms like the Climate City Capital Hub, making small-scale urban efforts bankable at scale.

Cities often have ambition but lack the means to act independently. This model demonstrates how regional authorities can bridge structural gaps—not by funding everything directly, but by empowering cities to attract and deploy capital with confidence. It offers a roadmap for climate goals to be accelerated when regional leadership meets local initiative.



5. What Comes Next for City Finance: A Roadmap for Resilience

Cities are at the forefront of solving today's most urgent development challenges—but to meet growing demands, they are recommended to be equipped with greater fiscal autonomy, strategic foresight, and financial innovation. Tools exist. Examples are emerging.

The imperative now is execution. This section outlines four key shifts that define the new agenda for municipal finance, along with specific actions that can help local governments.

5.1 From Dormant Assets to Strategic Capital Use

Cities hold substantial public assets—land, buildings, and infrastructure—that are often underused. These can be actively managed and monetized to unlock capital for infrastructure and service delivery.

Key Actions:

- Create detailed public asset registries and conduct market-based valuations.
- Identify priority assets for leasing, joint ventures, or repurposing aligned with development goals.
- Establish cross-departmental asset management units to integrate fiscal and urban planning.

5.2 From Static Budgets to Outcome-Linked Investments

Fiscal discipline can focus not only on limiting spending but on achieving measurable results. Performance-based budgeting can link investment decisions to defined outcomes, improving efficiency and transparency.

Key Actions:

- Set clear KPIs for major investment areas—especially infrastructure and PPPs.
- Reallocate end-of-year budget surpluses to top-performing programs.
- Publish impact dashboards that track financial performance and service results over time.

5.3 From Isolated Planning to Regional Alignment

Many urban challenges—climate change, digital inclusion, and economic opportunity—span beyond city boundaries. Aligning with regional and national frameworks can help cities access additional funding and scale impact.

Key Actions:

- Position city initiatives within broader national or regional development plans.
- Build pipelines of bankable projects tied to regional and international funding instruments (e.g., EU funds, Multilateral Development |Banks [MDBs]).
- Join city networks or consortia that facilitate regional dialogue and co-investment strategies.

Together, these shifts represent a new agenda for city finance—one that's proactive, entrepreneurial, and integrated. Municipalities are no longer simply service providers; they are economic enablers, asset stewards, and climate actors. A financially empowered city is one that can shape its own future.

CITY-TO-CITY (C2C) COOPERATION

Scaling Solutions Through Shared Strength

05

05 City-to-City (C2C) Cooperation: Scaling Solutions Through Shared Strength

As urban challenges grow more complex—from decarbonization and digitization to funding constraints—cities are increasingly realizing that they cannot act alone. The risks they face, whether heatwaves, floods, cyber risks, or capital shortages, do not stop at city boundaries. Yet while the problems are shared, solutions often remain siloed.

This is where C2C cooperation emerges as a strategic enabler. By connecting across borders, cities can accelerate peer learning, replicate proven solutions, and pool technical capacity and resources more efficiently. In a landscape marked by uneven climate ambition, digital maturity, and fiscal strength, city partnerships offer a pragmatic pathway to scale—building not from scratch, but from each other's momentum.

1. C2C Cooperation in Action: Six Engagement Models for Urban Collaboration

C2C collaboration takes many forms—from symbolic gestures and knowledge sharing to fully institutionalized or co-funded initiatives. To understand how this collaboration works in practice, it is helpful to examine the diverse ways cities are partnering. The report outlines six common engagement models that span themes such as climate action, urban finance, and digital transformation. These models vary in structure and intensity, but all share a common purpose: to accelerate learning, unlock innovation, and achieve results faster than any city could alone.

Exhibit 32: Six engagement models of C2C cooperation illustrate how urban partnerships vary in purpose, structure, and strategic value, from symbolic ties to crisis response

Engagement Type	What it means	Examples
Symbolic Partnerships	Diplomatic or ceremonial ties that focus on visibility, cultural exchange, and long-term intent.	**Dubai and Barcelona** signed a smart city MoU to promote innovation and branding. Both cities co-participate in global expos and forums to exchange ideas and increase visibility.
Technical Collaboration	Structured knowledge exchange on specific themes like governance, budgeting, or service delivery.	**Amman and Barcelona** collaborated to share technical expertise on developing accessible urban spaces
Project-Based Collaboration	Joint implementation of concrete projects with shared goals, timelines, and funding.	**Munich and Gharb** Irbid co-developed a women's startup center and waste-container factory. Combined German technical input with local leadership to deliver lasting outcomes.
Network-Based Collaboration	Multiple cities working together in a coordinated platform for learning and resource sharing.	**The Maghreb–Germany** leadership exchange facilitates joint urban governance training and forums. Helps regional leaders build capacity and peer
Economic Partnerships	Cooperation focused on trade promotion, investment facilitation, or local economic development.	**Abu Dhabi and London** fostered financial sector ties through annual city-led trade missions and investment forums, strengthening bilateral economic cooperation.
Crisis Response	Support during emergencies — such as refugee influx, disasters, or recovery efforts.	**German–MENA** host city ties helped cities adapt budgets and share plans for refugee integration. Enabled quick exchange on public services and urban resilience strategies.

Sources: Barcelona City Council; GIZ, *City-to-City cooperation Maghreb-Germany (KWT II)*, published on June 2022; MedCities

Symbolic partnerships are often the starting point of C2C cooperation. Commonly formalized through twinning agreements or Memoranda of Understanding (MoUs), these partnerships aim to create diplomatic, cultural, and economic ties that pave the way for deeper engagement. While they may not involve technical cooperation or joint project delivery in the initial stages, they play an essential role in trust-building, city branding, and international positioning. Cities use these symbolic frameworks to organize joint events, exchange delegations, share visibility at international forums, and promote their global identities. Activities typically include participation in cultural festivals, bilateral business forums, trade expos, or joint representation in global initiatives. Importantly, symbolic partnerships also serve to build internal capacity by exposing city leadership and technical staff to new ideas, networks, and governance models — often acting as a low-cost, high-impact mechanism to prepare the ground for future collaboration.

One example of a symbolic partnership that has evolved into a dynamic C2C relationship is between Dubai and Barcelona. The collaboration was formalized through the signing of a smart city MoU, rooted in knowledge exchange and joint promotion[1]. Both cities leveraged the agreement to promote smart city branding, innovation dialogue, and cross-regional collaboration.

1. Dubai Technology Entrepreneur Campus, DSOA Signs Two Agreements with Barcelona and Amsterdam, published on June 27, 2014

Since its inception, Dubai, and Barcelona have engaged through delegations, exhibitions, and expert forums that explore urban innovation, sustainability, and digital governance. The partnership includes mutual participation in key global events, such as Smart City Expo World Congress in Barcelona and innovation-led showcases in Dubai, enabling both cities to amplify their global visibility. The MoU has also facilitated the exchange of best practices on areas such as smart mobility, municipal services digitization, and city branding strategies—demonstrating that even without joint infrastructure projects, symbolic cooperation can significantly enhance strategic alignment and international positioning.

Technical cooperation involves a targeted exchange of expertise between cities to strengthen local capabilities and improve service delivery. These arrangements typically focus on practical challenges such as digital governance, climate adaptation, infrastructure design, or urban planning. Cooperation often takes the form of study visits, pilot demonstrations, or structured advisory support—enabling cities to learn from proven models and apply insights to their own context. While less resource-intensive than joint project implementation, technical partnerships deliver high impact when grounded in mutual respect and operational alignment. They are particularly valuable for cities seeking to localize global best practices and accelerate innovation without starting from scratch.

Exhibit 33: Amman draws lessons from Barcelona on flood resilience and public transport through targeted technical cooperation

Context

Amman and Barcelona have several similarities:

High population density: Resulting in traffic congestion and pressure on public spaces.

Shared climate vulnerabilities, particularly flash flood risks common in Mediterranean geographies.

Cooperation

Leverage Technical Expertise

Amman's technical teams conducted site visits to Barcelona to study successful urban interventions firsthand. These exchanges focused on gaining actionable insights into urban planning, infrastructure design, and sustainable service delivery — adapted to Amman's local context.

Learning

Sustainable Urban Drainage System

Amman identified decentralized drainage solutions inspired by Barcelona's approach to manage flash flooding in dense urban areas.

Public Transport Development & Management

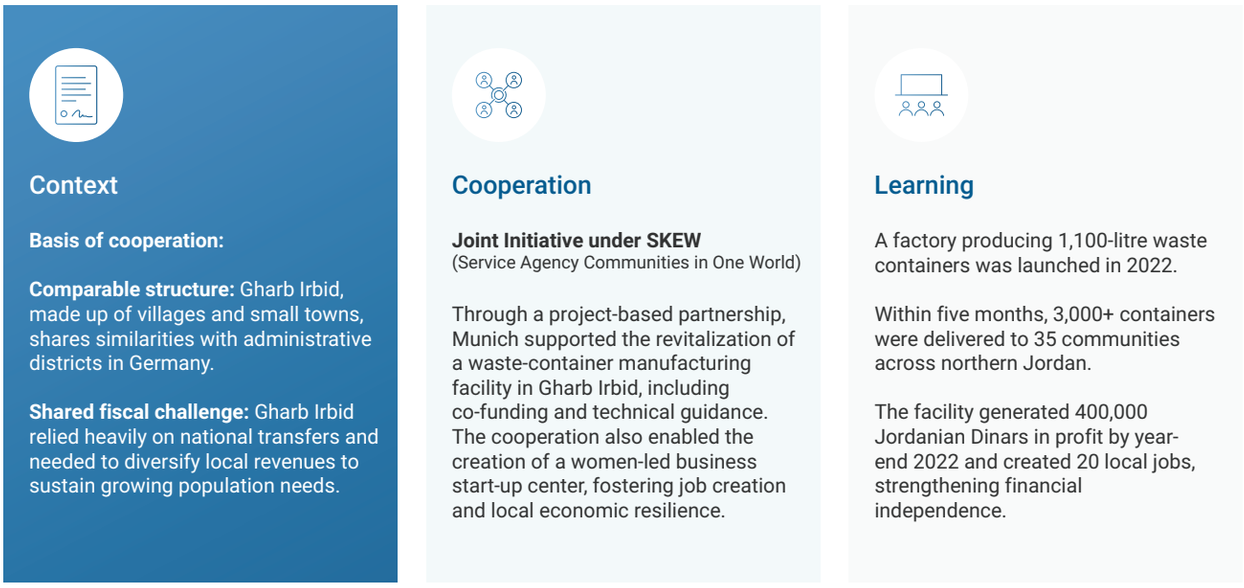
With car usage exceeding 90%, Amman is learning from Barcelona's transit system to reduce congestion and develop efficient public mobility options.

Source: GIZ, Amman–Barcelona Study Tour: Participatory urban regeneration, green infrastructure and biodiversity; 2021

Project-based cooperation refers to time-bound partnerships in which cities jointly implement defined initiatives with shared responsibilities. These collaborations are typically guided by a clear scope of work, defined outcomes, and agreed timelines, often supported by technical or financial

contributions from one or more partners. Project-based models are well-suited to addressing specific municipal needs such as service delivery, infrastructure upgrades, or local economic development. The approach enables practical exchange between cities, combining technical knowledge and local insight to support effective implementation and measurable impact.

Exhibit 34: Gharb Irbid and Munich partnered to launch a local waste container initiative, boosting jobs and fiscal self-reliance



Source: SKEW; Container production and women start-ups

Network-based collaboration connects multiple cities within a common platform to exchange ideas, strengthen institutional capacity, and pursue collective goals. These networks can be geographic (e.g., regional blocs) or thematic (e.g., digital transformation, climate resilience) and are particularly valuable for mid-sized or lower-capacity cities that may lack access to international initiatives on their own. Networks provide structured opportunities for cities to engage in peer-to-peer learning, access pooled technical resources, and influence global urban agendas.

A notable example is the Maghreb–Germany leadership exchange, which connects municipal leaders through regional forums and joint training sessions. These interactions are designed to build local governance capacity, share administrative tools, and promote a culture of continuous improvement. The network has enabled participants to strengthen leadership development and apply shared learning to their local planning and policy contexts—creating an environment of mutual reinforcement across participating cities.

Economic partnerships between cities focus on facilitating business growth, trade relations, and investment promotion across borders. These arrangements are typically formalized through cooperation agreements between municipal authorities, chambers of commerce, or investment promotion offices and are geared toward generating economic spillovers through shared events, joint branding, and knowledge exchange. They allow cities to leverage each other's comparative advantages and provide a structured pathway for linking local enterprises to international markets.

An example of this model is the economic partnership between Abu Dhabi and London, where city-led trade missions and annual investment forums have strengthened financial sector ties. By facilitating cross-border collaboration in banking, professional services, and innovation, this cooperation has

enhanced bilateral economic development, positioned Abu Dhabi as a growing financial hub, and reinforced London's global investment networks.[2]

Crisis response cooperation allows cities to extend assistance during times of acute need, such as natural disasters, refugee surges, or health emergencies. These partnerships are typically characterized by agility, trust, and mutual support—and may involve knowledge sharing, joint planning, or targeted technical assistance. While often informal or time-bound, crisis-driven partnerships can establish the basis for longer-term cooperation and resilience-building.

The German–MENA host-city cooperation offers a compelling example of this approach. It was initiated to support cities in the MENA region facing population pressures from displacement and migration. Through technical assistance, peer exchanges, and shared planning models, German municipalities worked with frontline cities to adapt municipal budgets, improve refugee service delivery, and plan for inclusive urban growth. This cooperation not only helped address immediate needs but also built municipal capacity to better manage future shocks.

2. Designing for Impact: Five Pillars of Effective City Collaboration

As cities confront increasingly complex challenges across climate action, digitalization, and financial resilience, C2C cooperation has emerged as a vital enabler of local progress. However, successful collaboration doesn't happen by default; it requires careful design.

> "Successful city-to-city cooperation reguires shared goals, political support, and a unified vision for addressing key challenges. Geographic proximity and common issues can further strengthen these efforts"
>
> **- Anda Bergmane, Head of International Cooperation Division, Riga**

Experience shows that five core elements may come together to transform intent into results: shared strategic priorities, clear governance structures, strategic pairing with defined roles, coordinated funding mechanisms, and a strong operational backbone. The following section outlines each of these elements, illustrated with new and diverse examples.

2.1 Shared Strategic Priorities: Aligning Missions to Maximize Impact

The most effective city partnerships are grounded in shared, actionable goals. Cities that converge around common missions—such as climate resilience or smart infrastructure—can synchronize efforts and scale results. For instance, in 2024, Dubai and London formalized such a partnership through an MoU[3]. By strengthening collaboration across investment, trade promotion, and business development, the two global hubs aim to leverage each other's ecosystems to support growth, expand market access, and foster regulatory alignment. Their partnership includes joint trade missions, information exchange, and collaborative participation in expos, creating a stronger platform for bilateral innovation and economic expansion.

2. First Forum, A multi-faceted relationship.
3. Emirates News Agency, Dubai Chambers signs MoU with London Chamber of Commerce and Industry, published December 5, 2024

"Successful city-to-city cooperation depends on a shared vision, strong leadership, open communication, capacity building, and the flexibility to adapt models to local contexts—all anchored in clear strategies, institutional support, and continuous evaluation."

- Njoud Abdeljawad, Director of the International Relations and Technical Support Department, Greater Amman Municipality

2.2 Clear Governance Structures: Providing Continuity and Credibility

Without well-defined governance structures, partnerships risk fragmentation. Strong operating models ensure transparency, accountability, and the ability to sustain momentum across political cycles. A case in point is the Beirut–Marseille agreement to rebuild Beirut's port following the disaster. The port was severely damaged in the 2020 explosion, which devastated large parts of the city and crippled critical infrastructure. The partnership succeeded because governance was clearly defined: dedicated joint committees oversaw implementation, supported by technical assistance from Expertise France—enabling steady recovery efforts despite complex operating conditions.

2.3 Strategic Pairing and Defined Roles: Matching Strengths, Not Just Similarities

C2C cooperation is more effective when partners bring complementary strengths—innovation, scaling, technical expertise—and define roles clearly from the outset. The partnership between Copenhagen and New York City reflects this approach. Copenhagen's expertise in cloudburst flood management was adapted by New York to address coastal storm risks, resulting in joint urban resilience initiatives like the Queens Cloudburst Project.

2.4 Coordinated Funding Mechanisms: Unlocking Scale Through Joint Investment

Joint financing is the engine that transforms pilots into lasting programs. Successful partnerships proactively align funding sources early on, whether through international organizations, national governments, or blended models.

For instance, the Arab Towns Organization (ATO), which represents over 400 municipalities across the MENA region, exemplifies this principle. By coordinating technical exchanges and mobilizing funding to update urban legislation and promote resilience programs, ATO has demonstrated how pooled resources can accelerate collective impact.

2.5 Strong Operational Backbone: Sustaining Collaboration Over Time

Beyond initial agreements, cities need a sound institutional or programmatic backbone to ensure continuity, support coordination, and adapt as challenges evolve. The Cooperation in Urban Development and Dialogue (CIUDAD) program, funded by the European Commission, linked EU cities with partners in Eastern Europe, the Mediterranean, and the Caucasus. By providing governance capacity-building and project funding across more than 20 cities, CIUDAD shows how an operational platform can turn shared ambitions into a lasting, scalable impact for the municipalities.

3. Way Forward: Unlocking Shared Progress Through City Partnerships

C2C cooperation has evolved far beyond ceremonial exchanges—it is now a deliberate strategy to address structural challenges that no single municipality can face alone. Whether cities are responding to climate threats, closing infrastructure gaps, or scaling digital innovation, partnerships offer a low-risk, high-impact pathway to accelerate progress. C2C collaboration creates access to global know-how, builds trust among institutions, and fosters experimentation in a safe, peer-based environment—all while respecting local context and capacity.

The three core themes explored throughout this report—climate resilience, digital transformation, and municipal finance—are deeply interconnected, and C2C cooperation cuts across all of them. Cities are already co-developing climate adaptation plans, sharing AI governance models, and partnering to mobilize capital for essential services. These examples show that when cities engage directly with one another, they can bypass bureaucracy, fast-track innovation, and scale what works. Cooperation becomes not just a nice-to-have, but a lever for structural reform and collective advancement.

Looking ahead, the imperative is clear: cities that cooperate will move faster, smarter, and with greater impact. As urban challenges grow more interconnected, the next generation of successful cities will not be defined only by their size or budgets, but by their ability to collaborate across borders, learn continuously, and lead through partnership. For cities around the world, this is no longer optional. It is the future of resilient, inclusive, and forward-looking urban leadership.

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