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INTEGRATED SUSTAINABLE URBAN DEVELOPMENT ASSESSMENT (ISUDA) AGGREGATED ANALYSIS REPORT FOR URBANSHIFT CITIES

Benchmarking Progress and Identifying
Pathways for Integrated Urban Development

*Key Trends, Cross-Cutting Challenges and Strategic
Recommendations*



ACKNOWLEDGEMENTS

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ABOUT ICLEI - LOCAL GOVERNMENTS FOR SUSTAINABILITY

ICLEI – Local Governments for Sustainability is a global network working with more than 2,500 local and regional governments committed to sustainable urban development. Active in 125+ countries, ICLEI influences sustainability policy and drives local action for low emission, nature-based, equitable, resilient and circular development. ICLEI's Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.

ABOUT URBANSHIFT

Funded by the Global Environment Facility, UrbanShift is a partnership between World Resources Institute, C40 Cities, ICLEI – Local Governments for Sustainability, and UN Environment Programme that works across nine countries and 23 cities to advance sustainable and integrated approaches to urban development. UrbanShift spans on-the-ground implementation and broad capacity-building support for city officials to pursue transformative urban development. Led by the UN Environment Programme, UrbanShift is working to transform cities for people and the planet through sustainable, integrated, zero-carbon urban development.

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Executive Summary

UrbanShift, the brand name of the Global Environment Facility's Sustainable Cities Impact Program, supports cities around the world to adopt integrated approaches to urban development, building an equitable, zero-carbon future where both people and planet can thrive. It is led by the UN Environment Programme and implemented in partnership with the World Resources Institute, C40 Cities, ICLEI - Local Governments for Sustainability, the UN Development Programme, the World Bank, and the Asian Development Bank.

The Integrated Sustainable Urban Development Assessment (ISUDA) is the official research component of UrbanShift and is led by ICLEI - Local Governments for Sustainability. The ISUDA analyses the commitment of subnational governments to integrated sustainable urban development (ISUD) by assessing the multiple dimensions of ISUD and the persistent and emerging challenges in each city.

Following the completion of a baseline ISUDA at the beginning of the project, and follow-up ISUDA assessment at the end of the project for each of the 23 UrbanShift cities, a high-level analysis was undertaken to synthesise and aggregate the findings.

The Aggregated Analysis Report presents an overview of these findings and highlights overarching trends within each dimension of ISUD, key challenges, and targeted recommendations intended to inform and guide future actions in cities. This report has been developed to support project cities and non-project cities, urban practitioners, and non-state actors working with local governments.

Institutional fragmentation and lack of integrated cross-sectoral coordination become structural gaps in the face of escalating climate change and increasingly complex challenges related to risk and carbon emissions. There is a clear need for an assessment framework that truly aligns with local realities and becomes an actionable, adaptable, and learnable set of sustainability guidelines for cities.

Based on the analysis compared to the baseline, these UrbanShift cities have demonstrated particularly strong improvement in *Global Engagement, Partnerships and Advocacy*, re-emphasizing the important role of cities as nodes of collaboration and coordination with international partners and policy agendas in advancing ISUD. Compared to other urban reports, this report is unique in providing a comparable analysis and set of indicators across cities. It goes beyond examining only environmental, social, and economic dimensions by also addressing cross-sectoral cooperation, institutional coordination, and both international and local governance mechanisms.

This report serves as a valuable knowledge product for decision-makers and city officials to reflect on further actions and improvements they can undertake to foster better ISUD and support a more sustainable life for all residents.



Introduction



ABOUT INTEGRATED SUSTAINABLE URBAN DEVELOPMENT

Integrated Sustainable Urban Development (ISUD) refers to a holistic approach to urban planning that goes beyond traditional sectoral policy implementation, focusing on creating synergies across multiple areas of city design and management. ISUD emphasizes the importance of multilevel governance, involving cooperation between local, regional, and national levels, as well as a broad range of stakeholders. This approach requires aligning urban development strategies with broader regional and national planning guidelines, thereby extending beyond the city's administrative boundaries.

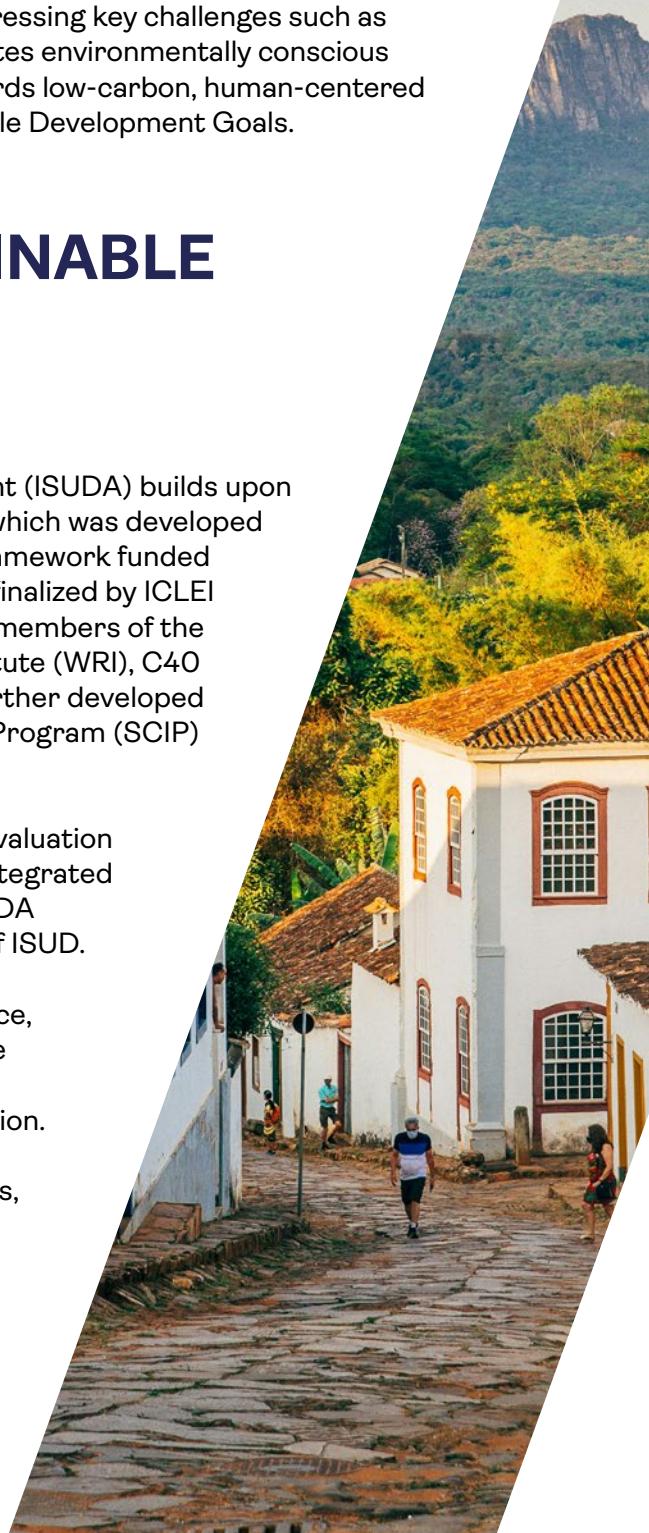
ISUD champions a comprehensive vision that encourages cities to work across various policy areas, better integrate diverse funding sources, and adopt a results-oriented framework supported by systematic monitoring and evaluation. By addressing key challenges such as climate change, biodiversity loss, and pollution, ISUD promotes environmentally conscious and equitable urban development, aiming to transition towards low-carbon, human-centered urban models that contribute to achieving the UN Sustainable Development Goals.

THE INTEGRATED SUSTAINABLE URBAN DEVELOPMENT ASSESSMENT

The Integrated Sustainable Urban Development Assessment (ISUDA) builds upon the Sustainable Urban Development Assessment (SUDA), which was developed under the Global Platform for Sustainable Cities (GPSC) framework funded by the Global Environment Facility (GEF 6). The SUDA was finalized by ICLEI - Local Governments for Sustainability in consultation with members of the GPSC Resource Team, including the World Resources Institute (WRI), C40 Cities, and the World Bank. The SUDA was subsequently further developed into the ISUDA under the GEF-7 Sustainable Cities Impact Program (SCIP) and applied in UrbanShift project cities.

The purpose of the ISUDA is to conduct a comprehensive evaluation of a local government's commitment to, and execution of, integrated sustainable urban development within its territory. The ISUDA comprises 36 indicators which cover multiple dimensions of ISUD. These include approaches to planning, finance, institutional and data-informed planning capacity, urban climate resilience, advocacy, multi-stakeholder collaboration, and localizing the SDGs. The ISUDA also identifies persistent and emerging challenges in each city to establish the priority areas for action.

The outcomes of an ISUDA can be used for several purposes, enabling local governments to collaborate with different groups of stakeholders.



- **Local Government Officials and Policymakers:** The ISUDA can be used to take stock of urban planning and sustainable development documents, identify existing programs as well as policy gaps, track progress towards integrated sustainable urban development, identify persistent and emerging challenges, and inform strategic planning and budget allocation for future projects.
- **Urban Planners and Practitioners:** The ISUDA facilitates a data-driven approach to co-creating local projects with sub-national governments based on the needs and priorities of the city as well as ongoing activities, initiatives, and projects to avoid duplication of efforts.
- **Researchers and Academics:** Provides local governments with an actionable dataset that can serve as a foundation for collaboration with higher education and research institutions, mobilizing targeted research in locally identified priority areas.

The ISUDA outcomes contribute to several key areas:

- **Progress Tracking and Benchmarking:** By establishing a baseline, subsequent ISUDAs allow the city to track its progress over time which can act as a feedback loop, allowing decision-makers to assess what is working, identify emerging gaps, and adjust policies and investments accordingly.
- **Data-driven Insights:** The assessment provides data-driven insights into key challenges and vulnerabilities, allowing decision-makers to prioritize future actions and allocate resources efficiently.
- **Enhanced Coherence:** Contributes to an evolving knowledge base that supports coherent, system-wide interventions rather than fragmented, stand-alone projects. The integrated nature of the assessment helps reveal potential conflicts or missed synergies between different sectors, leading to more coherent and effective urban development strategies.
- **Increased Coordination:** The systematic methodology and results foster greater coordination among city officials within and between local government departments.

ISUDA INDICATORS AND ASSESSMENT

To conduct the aggregated analysis and examine the implementation, 35 indicators were selected, covering the multiple dimensions of integrated sustainable urban development: approaches to planning, finance, institutional and data-informed planning capacity, urban climate resilience, advocacy, multi-stakeholder collaboration, and localizing the SDGs, with an additional indicator on COVID-response mechanisms was added in the 2021 baseline assessment. All indicators and their description are shown in [Annex 1](#).

A baseline ISUDA was completed for each project city at the beginning of UrbanShift (2021), and a follow-up ISUDA was completed for each project city at the end of UrbanShift (2025).

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Methodology for ISUDA Composite Indicator



Composite indicators are particularly valuable for operationalizing complex and multidimensional concepts by integrating diverse variables into a single, structured framework grounded in a clear theoretical foundation. By synthesizing multiple dimensions into a comparable and interpretable measure, they facilitate systematic assessment, benchmarking, and communication of otherwise abstract phenomena to decision-makers and practitioners [1]. When constructed transparently and grounded in a clear conceptual framework, they also help place performance and progress at the centre of policy debate, facilitating communication and accountability while retaining the underlying informational base [2].

In this report, six dimensions were pre-defined and categorized based on data-driven approaches and a critical literature review, following the workflow introduced in the next section to aggregate ISUDA indicators to identify the trends between the baseline and current status. The 2021 baseline assessment included an additional COVID-response indicator (Indicator 28), resulting in a total of 36 indicators in 2021, compared to 35 indicators in 2025. To ensure data consistency and enable comparability between the two assessment periods, the COVID-response indicator was excluded from the analysis. A flowchart illustrating the research methodology is presented in Fig. 1, highlighting the linkages involved in the development of the Composite Indicator. A more detailed overview of the composite indicator construction process is provided in Fig. 2 and the subsequent subsections.

In short, the development of a Composite Indicator is particularly useful for enabling practitioners to quickly identify which broad areas of urban development are lagging, transforming what would otherwise be a descriptive and extensive dataset into a structured set of key dimensions. By accounting for the interrelated nature of the factors involved, this method provides an integrated overview of functional capacity rather than focusing on isolated indicators. It also helps to highlight cross-cutting issues associated with the identified cluster challenges and to better guide navigation toward the recommendations presented in this report, ultimately supporting the enhancement of overall ISUD.

The six aggregated dimensions are first introduced, followed by a detailed explanation of the weighting approach applied to construct the Composite Indicator.

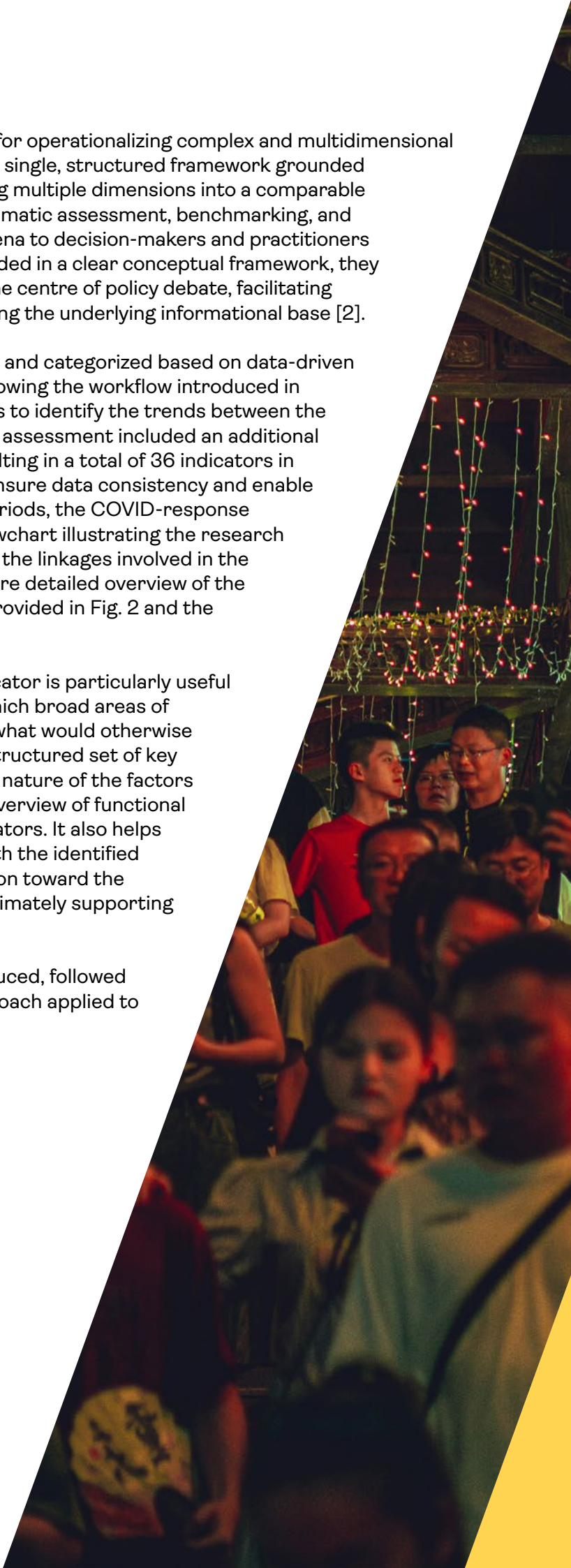
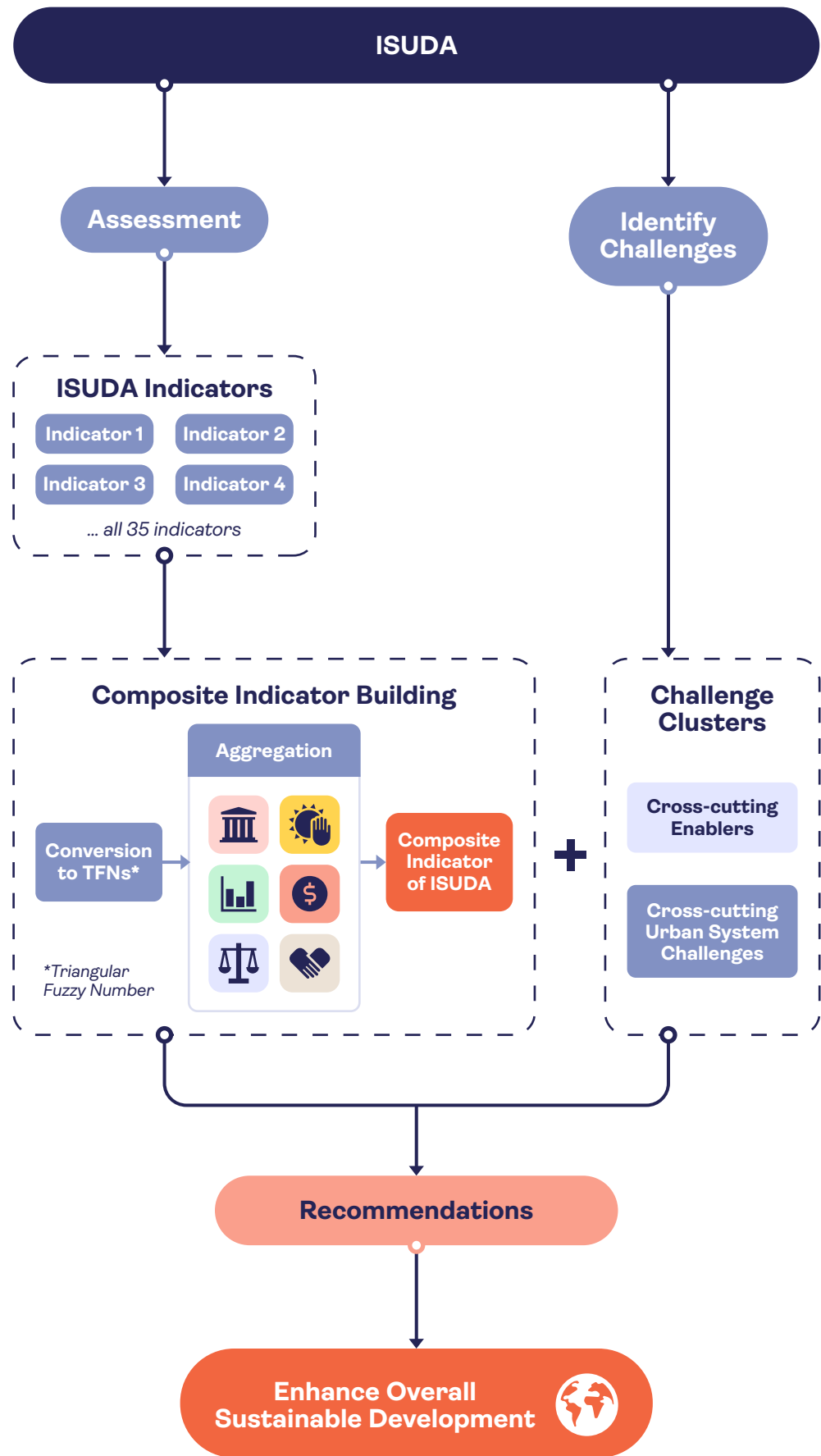


FIGURE 1. WORKFLOW OF COMPOSITE INDICATOR CONSTRUCTION AND ITS LINK TO EMERGING RECOMMENDATIONS



DIMENSION 1: GOVERNANCE & STRATEGIC PLANNING



(Indicator 1, 2, 3, 5, 7, 23, 24, 31, 34, 35)

This dimension reflects the institutional frameworks through which cities organize, plan, and implement sustainable strategies, representing the capacity to manage cross-sectoral policies effectively [3]. Central to this dimension is the concept of multilevel governance, which integrates local, regional, and national authorities to ensure policies are coordinated across jurisdictions [4], [5]. By fostering strategic planning across diverse sectors, these governance arrangements enable cities to move beyond fragmented projects and effectively tackle systemic urban challenges such as climate change [6], [7].

DIMENSION 2: CLIMATE ACTION, URBAN RESILIENCE & DISASTER RISK MANAGEMENT



(Indicator 4, 6, 25, 26, 27)

This dimension groups the core strategies required to protect urban populations from climate change and disasters, grounded in the IPCC AR6 [8], which emphasizes the inextricable link between climate mitigation and adaptation. As urban areas are identified as hotspots of high risk due to their dense concentrations of population and infrastructure, evaluating a city's responding mechanisms is essential for closing the "adaptation gap." By integrating Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) plans, cities can move toward a strategic imperative that enhances resilience and protects developmental gains [9], [10]. This dimension is also inherent in the United Nations Sustainable Development Goals (SDGs 11 and 13) and the Sendai Framework for Disaster Risk Reduction (2015-2030) [11], to consider both reactive emergency response and proactive risk governance.

DIMENSION 3: MONITORING, REPORTING, DATA & GEOSPATIAL DECISION SUPPORT



(Indicator 8, 9, 10, 11, 12, 21, 22)

This dimension reflects the city's technical capacity to leverage data for evidence-based policy and accountability. Geospatial and earth observation data serve as critical tools for deriving physical, climatic, and socio-economic indicators that support urban planning and emergency response [12], [13]. Through the application of this data, cities can more effectively identify and address complex challenges, including land consumption, housing adequacy, sustainable transport infrastructure, and climate targets [14], [15], [16]. Cities with strategic utilization of monitoring and responding platforms on climate change adaptation and GHG emissions reduction can assist in tracking and decision making for policy design [17]. By integrating multidisciplinary technological innovations, cities can improve policy development across diverse sectors, to ensure the successful implementation of the broader sustainable development agenda.





DIMENSION 4: FINANCE & RESOURCE MOBILIZATION



(Indicator 13, 14, 15, 16)

This dimension denotes the city's fiscal health and its institutional capacity to leverage diverse financial instruments for sustainable urban infrastructure. Beyond traditional budgetary allocations, a central component of this capacity is municipal creditworthiness, which serves as a fundamental prerequisite for accessing capital markets and securing long-term investment [18]. Effective resource mobilization requires a sophisticated understanding and in-depth review of financial mechanisms, ranging from green bonds and land value capture to public-private partnerships, to bridge the significant funding gaps in climate mitigation and adaptation [19]. Planning and financial innovations are crucial in delivering climate-compatible actions in the city [20]. Cities moving from traditional funding approaches to innovative resource mobilisation face significant challenges in developing new financial schemes to support more sustainable urban infrastructure in the transport, buildings, energy, waste, and water sectors. This can become more challenging due to the long-term nature, large upfront investment requirements and high risks [21]. Essentially, this dimension demonstrates the city's ability to navigate these financial complexities to ensure strategic sustainable urban development goals.

DIMENSION 5: EQUITY, SOCIAL INCLUSION & PARTICIPATORY PLANNING



(Indicator 17,18,19,20)

This dimension demonstrates the extent to which a city integrates inclusivity and social equity into its strategic decision-making. Recognizing distributional impacts of urban interventions across diverse population groups, research thereby highlights the identification of potential unintended consequences and ensures a more just design of mitigation and adaptation policies to protect vulnerable communities [22], [23], [24]. The development of participatory frameworks substantively contributes to the policy-planning process by reducing political risks and enhancing democratic legitimacy. Implementing a participatory approach strengthens multilevel governance by providing local communities with a formal mechanism to shape the implementation of broad policy objectives handed down from regional or national scales [25]. By prioritizing equity and inclusion, this dimension demonstrates how cities enhance protection across varied socioeconomic and demographic profiles to ensure that sustainable urban development strategies leave no one behind.

DIMENSION 6: GLOBAL ENGAGEMENT, PARTNERSHIPS & ADVOCACY



(Indicator 28, 29, 30, 32, 33)

This dimension showcases how cities actively engage with international policy arenas. Different forms of networking are essential for effectively scaling sustainability work through the sharing of specialized expertise [26]. By building partnerships with national and international stakeholders, local governments can significantly strengthen their climate action frameworks, utilizing these connections as vital conduits for information and experience exchange [27]. Furthermore, cities have evolved into active participants within national and international policy arenas. Through transnational city networks such as C40 Cities, ICLEI, and UCLG, municipal governments promote cross-boundary collaboration, joint advocacy, and collective problem-solving [28]. Within this framework, cities function as strategic nodes that collaborate internationally to advance sustainable development while simultaneously responding to, and shaping the global policy agenda.

ANALYTICAL FRAMEWORK: UNCERTAINTY IN ISUDA COMPOSITE INDICATORS

To ensure the ISUDA Composite Index accurately reflects urban reality, this report moves beyond “yes/no” scoring. A Fuzzy Multi-Criteria Decision Making (FMCDM) framework was adopted to categorize the dimensions of sustainable development to better accommodate the inherent vagueness of qualitative data [29], [30], making the resulting indices more robust than simple linear aggregation methods. Figure 2 (next page) demonstrates the workflow of analysis, where a Triangular Fuzzy Number (TFN) was created to include the fuzziness in the analysis. With uncertainty to evaluate and define the criteria weights, the importance of fuzzy set theory in calculating the composite indicators were underlined [31].

These TFNs effectively captured variation, ensuring a more flexible and realistic representation of the importance of the criteria [32]. By using this approach, ambiguity between *planned* and *implemented* actions is handled through overlapping fuzzy membership functions that can better reflect the compatibility and reality of ISUDA assessment.

The 2021 baseline included an additional COVID-response indicator (28), resulting in 36 indicators in 2021 and 35 in 2025. Therefore, the COVID-response indicator was removed before analysis to ensure data consistency. These ISUDA indicators were first converted into fuzzy values, which represent ranges or estimates rather than fixed numbers, in order to capture the uncertainty in the ISUDA responses. The process of transferring these ISUDA indicators into TFNs and their implications are outlined below:

- **Yes:** [0.75, 1.0, 1.0] - Fully Implemented
- **Yes, but not being implemented:** [0.5, 0.75, 1.0] - Strategic/Policy alignment without action
- **No, but plan to undertake:** [0.25, 0.5, 0.75] - Future intent established
- **No:** [0, 0.25, 0.5] - Minimal alignment
- **No and not planning:** [0, 0, 0.25] - No action or intent
- **Other:** [0.25, 0.25, 0.27] - Atypical Action

WEIGHTING AND SENSITIVITY

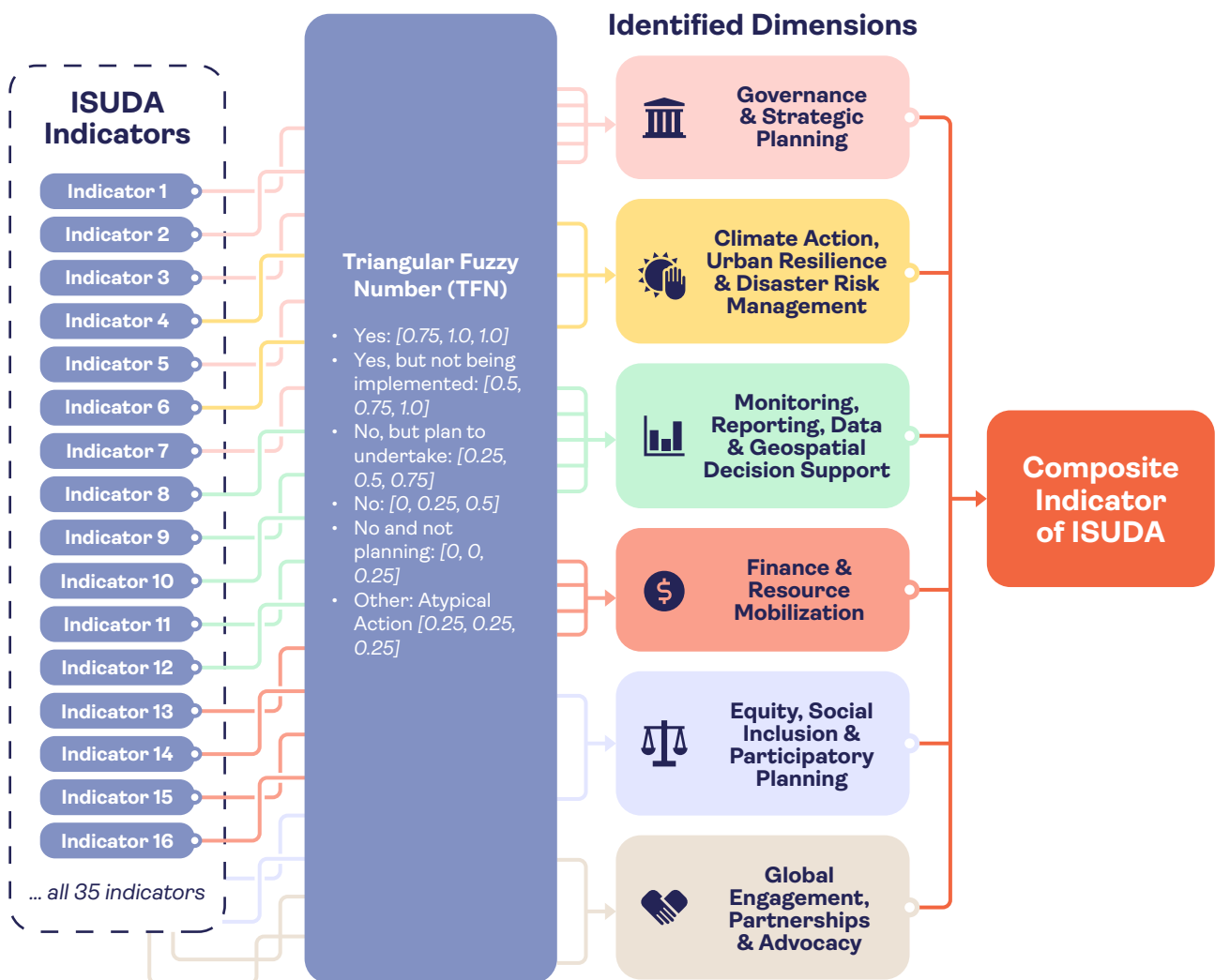
For each dimension, TFNs were averaged to transform the range of possible values into a single numerical score, thereby enabling the comparison across cities for each sustainability dimension. Once the numerical scores for each dimension are obtained, they are combined using equal weighting to generate a **Composite Indicator**. A subsequent normalization step was applied to ensure compatibility, enabling a meaningful review of the city’s overall performance in relation to ISUDA by comparing the current status with the baseline.

The use of equal weighting is justified as all 35 indicators are considered equally important, covering multiple dimensions of ISUDA. This approach enforces a non-compensatory logic, signaling to policymakers the importance of balanced development across all dimensions. Additionally, equal weighting helps avoid potential expert bias by ensuring that no single dimension is unfairly prioritized over others in the decision-making process.

In this report, the ISUDA Composite Indicator is designed as a strategic diagnostic tool rather than a definitive performance ranking. It reflects the structural capacity and readiness of a city's urban systems across interconnected pillars. Although a composite indicator is constructed for all UrbanShift cities, it does not represent an exact performance ranking. Fuzzy scoring captures the inherent uncertainty of practical implementation and reflects the qualitative nuance found in the gray areas between planning and implementation. It recognizes that urban transformation is not a binary process, and that the intent and momentum of a policy are analytically as significant as its final physical outputs. Nonetheless, this approach enables meaningful comparison across cities, in particular in identifying the change between key dimensions.

Consequently, observed improvements in a city's score indicate an evolution in systemic capacity. However, these improvements do not imply direct causal attribution to specific municipal actions alone. They reflect a dynamic landscape shaped by national policy frameworks, external financing, and local contextual factors. This approach therefore also allows systemic weaknesses within individual cities to be identified. For example, a city cannot achieve a high overall score if one of its dimensions is underdeveloped, even if it performs strongly in others.

FIGURE 2. WORKFLOW OF COMPOSITE INDICATOR BUILDING



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City Profiles



The following city profiles provide a concise snapshot of the 23 project cities, summarizing key characteristics that help contextualize the assessment findings and recommendations. Figure 3 below showcases all 23 UrbanShift cities.

FIGURE 3. URBANSHIFT CITIES



For each city, Table 1 presents recent population estimates, population growth rates, the area size, and main economic sectors, factors that shape development pressures, infrastructure demand, risk exposure, and implementation capacity. Together, these profiles support cross-city comparison while highlighting the diversity of urban contexts captured in this report.

TABLE 1. CITY PROFILES

Region	Country	City	Population	Population Growth Rate	Area	Main economic sectors
Latin America	Argentina	<i>Buenos Aires</i>	3,120,612 (2022)	0.78% (2022)	200 km ²	Food processing (meat, fish, and grain), metalworking, automobile assembly, oil refining
		<i>Mar del Plata</i>	665,357 (2023)	0.4% (2023)	79.48 km ²	Tourism
		<i>Mendoza</i>	2,014,533 (2022)	1.3% (2022)	148,827 km ²	Wine and olive oil production, and tourism
		<i>Salta</i>	719,000 (2023)	1.55% (2022)	-	Agriculture, mining, manufacturing, and tourism
		<i>Ushuaia</i>	82,615 (2022)	2.53% (2023)	23 km ²	Fishing, oil and gas extraction, and tourism
	Brazil	<i>Belém</i>	1,303,403 (2022)	1% (2023)	1,059.466 km ²	Mining, energy and local agricultural sector
		<i>Florianópolis</i>	537,213 (2022)	1.25% (2023)	674.884 km ²	Tertiary sector, trade and tourism
		<i>Teresina</i>	866,300 (2022)	0.91% (2023)	1,391.293 km ²	Service sector, public administration, industrial sector
	Costa Rica	<i>San José</i>	335,007 (2021)	1.43% (2021)	44.62 km ²	Tourism and agriculture
Asia	China	<i>Chengdu</i>	21,400,000 (2023)	3.3% (2020)	14,380 km ²	Manufacturing and technology
		<i>Chongqing</i>	32,133,000 (2023)	-2.11% (2022)	82,400 km ²	Automobile industry
		<i>Ningbo</i>	9.618 million (2022)	3.31% (2022)	9,816 km ²	Logistics, finance and e-commerce

Region	Country	City	Population	Population Growth Rate	Area	Main economic sectors
Asia	India	Chennai	11,933,000 (2023)	2.37% (2023)	426 km ²	Automobile and IT industries
		Pune	6,975,000 (2023)	3% (2023)	7,256 km ²	Software, automobile, and electronics industries
		Surat	8,232,085 (2024)	4.5% (2021)	461.60 km ²	Diamond and textile industry
	Indonesia	Balikpapan	746,804 (2024)	1.49% (2024)	503.3 km ²	Oil and coal industry
		Bitung	232,440 (2023)	1.17% (2024)	304 km ²	Fish processing, coconut processing, and other agriculture-based industries
		Jakarta	10,679,951 (2022)	0.57% (2021)	662.33 km ²	Service industry
		Palembang	1,718,440 (2024)	0.78% (2024)	400.61 km ²	Manufacturing, construction, and wholesale and retail trade
		Semarang	1,700,000 (2023)	0.2% (2022)	373.78 km ²	Trade and services
Africa	Morocco	Marrakech	1,571,580 (2024)	1.61% annual	2,625 km ²	Agriculture and tourism
	Rwanda	Kigali	1,700,000 (2022)	3.25% annual	730 km ²	Finance and administration
	Sierra Leone	Freetown	1,200,000 (2019)	4.2% (2018)	82 km ²	Trade, mining, and agriculture

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Geographical Characteristics of UrbanShift Cities

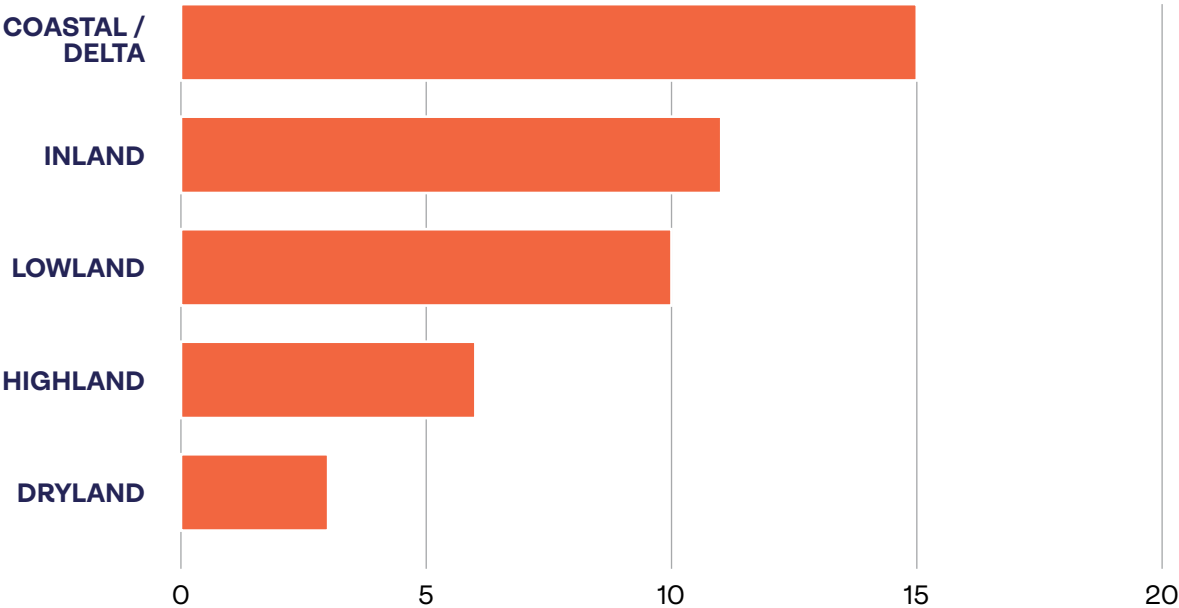


Cities located in coastal or delta regions often face heightened risks from sea-level rise, storm surges, flooding, and saltwater intrusion, making climate adaptation and resilient infrastructure central to sustainable urban strategies. Highland cities may contend with landslides, water scarcity, ecosystem fragility, and the impacts of temperature variability, which shape their approaches to land use, watershed management, and disaster risk reduction. Meanwhile, dryland cities typically experience chronic water stress, extreme heat, and desertification pressures, requiring integrated solutions for water governance, energy efficiency, and climate-responsive urban design.

GEOGRAPHIC TYPOLOGY

The bar chart illustrates the distribution of geographic characteristics across the 23 cities included in the study. Cities are classified according to all relevant spatial attributes, including coastal and deltaic¹, inland, lowland, highland, and dryland contexts and categories are not mutually exclusive. Several cities exhibit multiple geographic features, reflecting the layered and complex environmental conditions that shape their development trajectories. Presenting the full range of characteristics provides important contextual grounding for the analysis, as geographic setting directly influences exposure to climate risks, resource constraints, and infrastructure pressures. This comprehensive classification therefore supports a more nuanced understanding of how physical geography structures vulnerability and informs integrated sustainable urban development strategies.

FIGURE 4. GEOGRAPHIC TYPOLOGIES OF URBANSHIFT CITIES

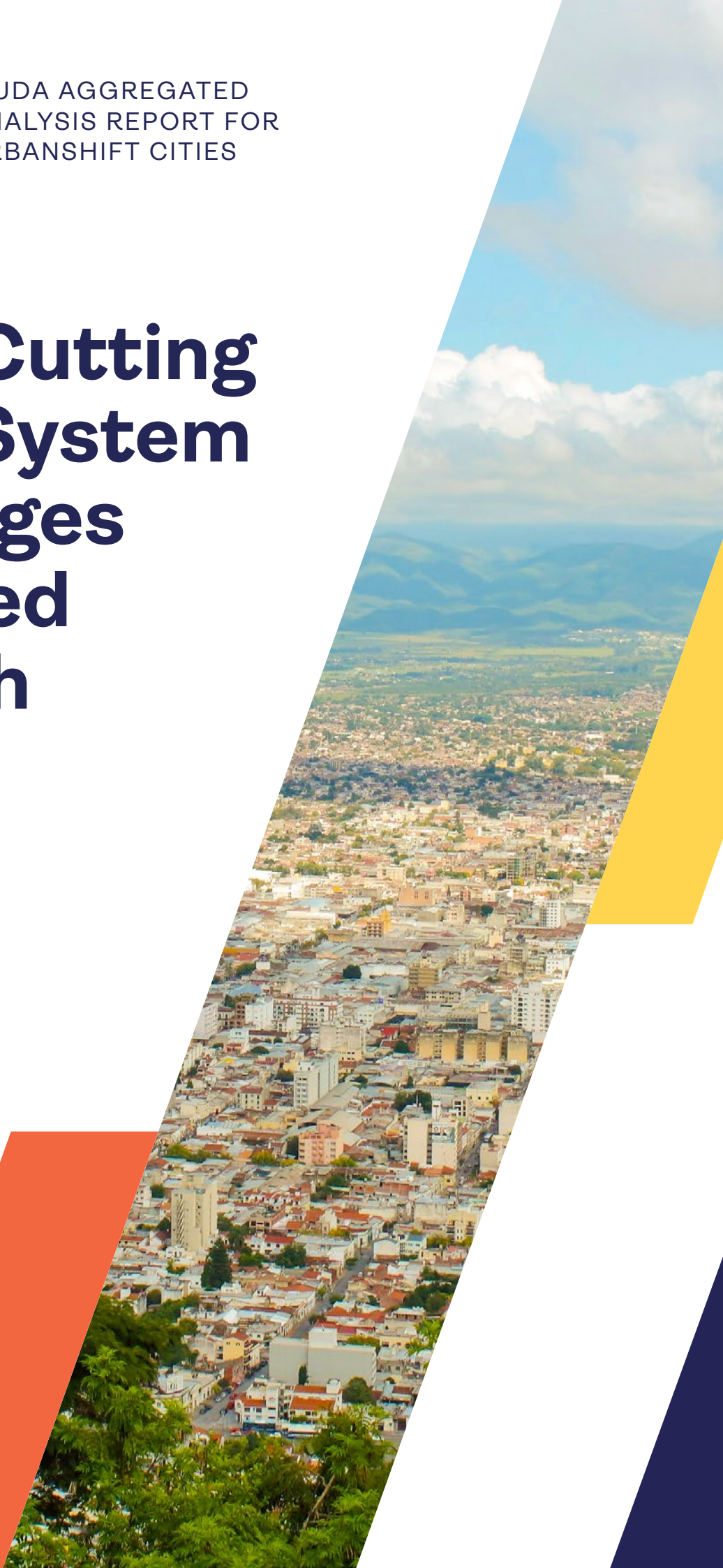


¹ Coastal and delta cities are grouped together because both share heightened exposure to sea-level rise, storm surges, and flooding, with low-lying topography and hydrological dynamics that generate closely aligned climate vulnerability and adaptation challenges [33].

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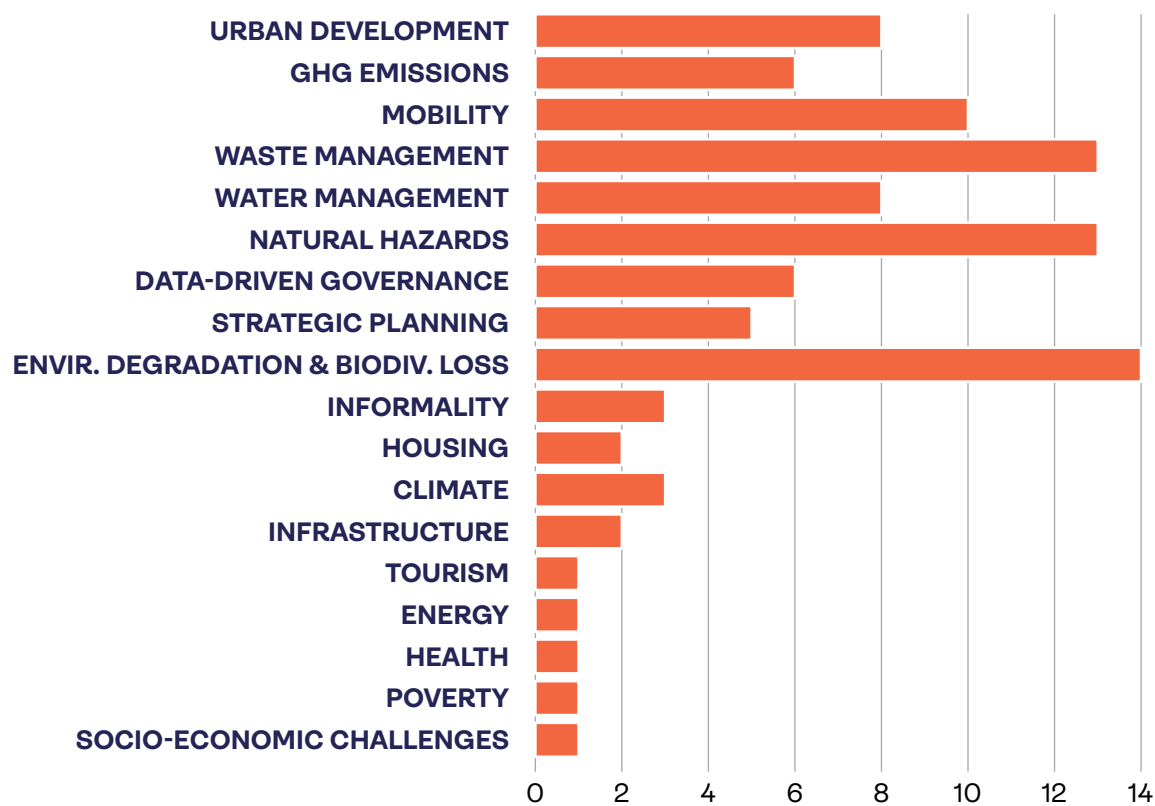
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Cross-Cutting Urban System Challenges Identified Through ISUDA



The ISUDA findings delineate the multi-dimensional challenges confronted by the UrbanShift cities², as identified directly by city leaders and urban practitioners.

FIGURE 5. CROSS-CUTTING URBAN SYSTEM CHALLENGES IDENTIFIED IN URBANSHIFT CITIES



From a cross-sectoral institutional perspective, the findings emphasize the critical roles of data-driven governance and strategic planning. These elements are pivotal in orchestrating effective responses to the complex challenges identified, demonstrating their prevalence across multiple urban settings. Health and poverty are interlinked with urban planning and sustainability efforts, suggesting a holistic approach to urban policy-making that integrates socio-economic factors.

Key sector-specific challenges include mobility, waste management, energy management, water management, and tourism, each presenting unique obstacles that are pervasive across a considerable number of cities.

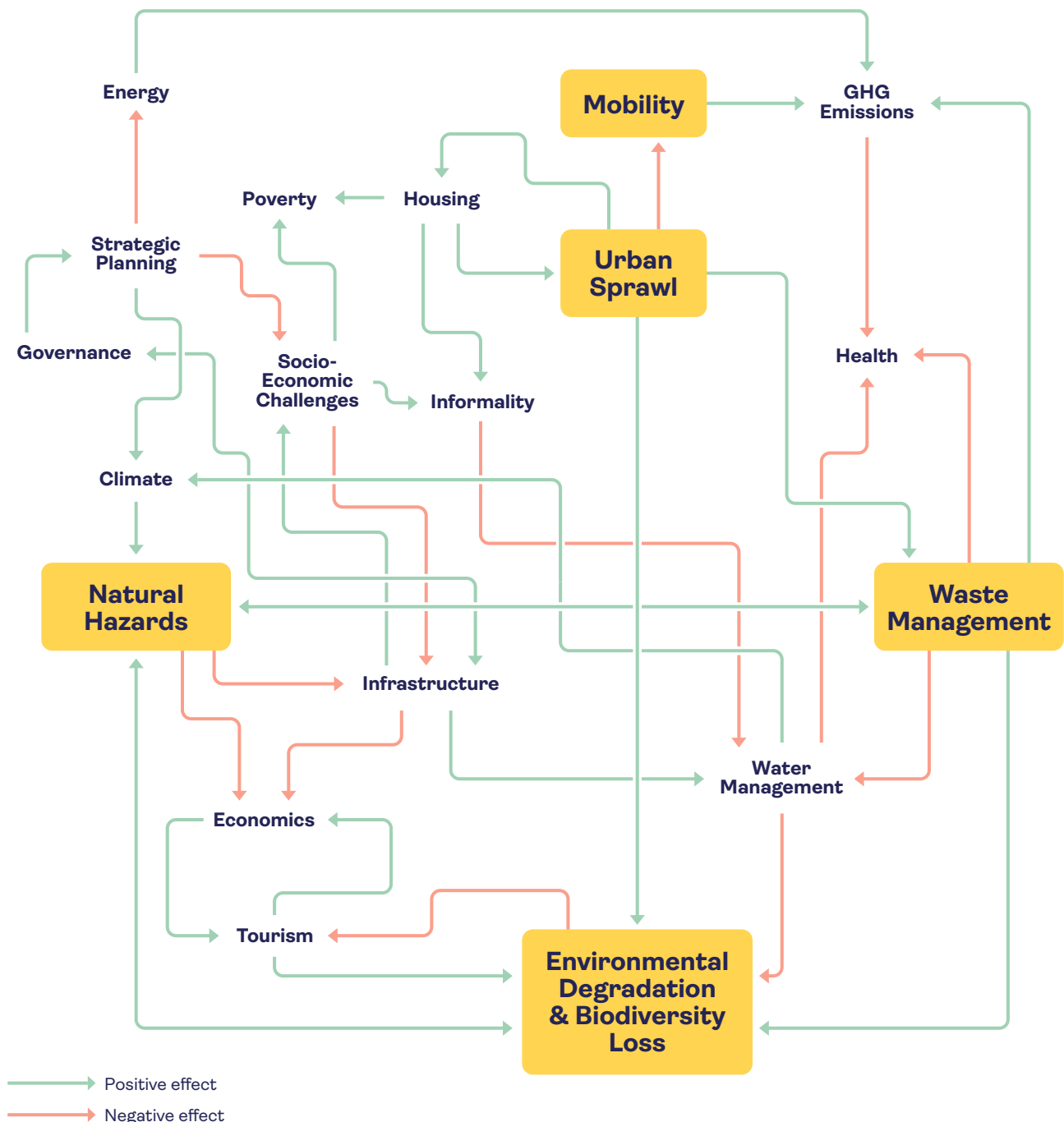
Environmental degradation and biodiversity loss are highlighted as acute concerns because they directly harm ecological balance, reduce biodiversity, and degrade the quality of life, leading to immediate, observable, and often irreversible damages if not addressed promptly, exacerbating other urban challenges and underscoring the necessity for integrated environmental strategies.

Housing, poverty, and urban informality are identified as escalating issues, as they represent problems that are expanding in scale due to factors like population growth and inadequate urban planning, leading to more pronounced social and economic disparities.

² Each city is counted only once within each overarching challenge category, irrespective of the number of specific sub-challenges it reports in that domain. Accordingly, the report measures the extent to which a given category of challenge is distributed across cities, rather than the number or variety of subtypes identified by any individual city.

The compounded pressures of climate, natural hazards, and urbanization were also reported. Climate change significantly exacerbates natural hazards, presenting multifaceted challenges for urban areas. Cities face increased frequencies and intensities of extreme weather events such as heatwaves, floods, and hurricanes, all of which are direct outcomes of climatic shifts. Additionally, secondary effects like landslides and earthquakes may also be influenced by the changing climate, especially as it affects environmental stability and water saturation levels in soils. These natural hazards strain urban infrastructures, elevate vulnerability among populations, and necessitate robust emergency preparedness and adaptive response mechanisms. The challenges of urbanization, particularly urban sprawl and growth, are closely intertwined with natural hazards. Urban sprawl often leads cities to expand into hazard-prone areas such as floodplains or unstable slopes, inadvertently increasing the risk and exposure to natural disasters.

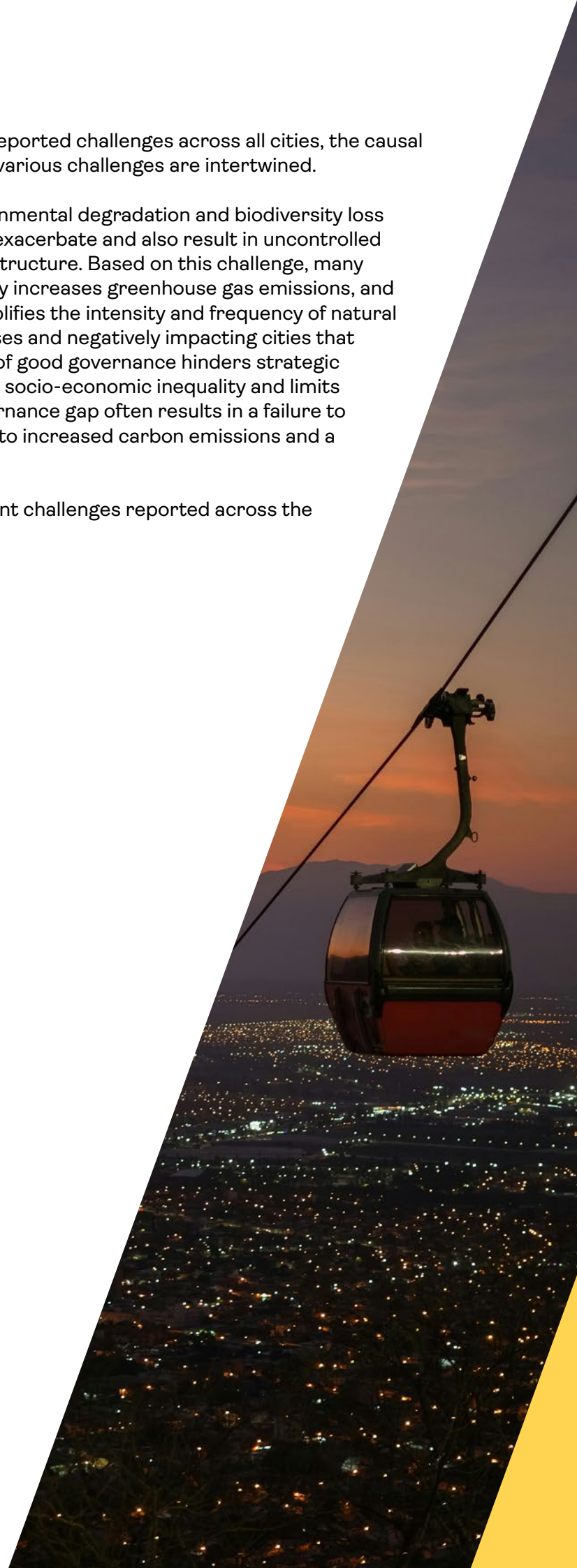
FIGURE 6. THE CAUSAL LOOP DIAGRAM OF TOP 5 REPORTED CHALLENGES



By summarizing the top five most frequently reported challenges across all cities, the causal loop diagram above demonstrates how these various challenges are intertwined.

In addition to the previously mentioned environmental degradation and biodiversity loss driven by urban sprawl, these factors further exacerbate and also result in uncontrolled waste production and inadequate waste infrastructure. Based on this challenge, many cities rely heavily on landfills, which significantly increases greenhouse gas emissions, and harm human health. While climate change amplifies the intensity and frequency of natural hazards, resulting in substantial economic losses and negatively impacting cities that rely on natural landscapes for tourism. A lack of good governance hinders strategic planning and management, which exacerbates socio-economic inequality and limits access to vital urban infrastructure. This governance gap often results in a failure to implement renewable energy policies, leading to increased carbon emissions and a lack of long-term climate resilience.

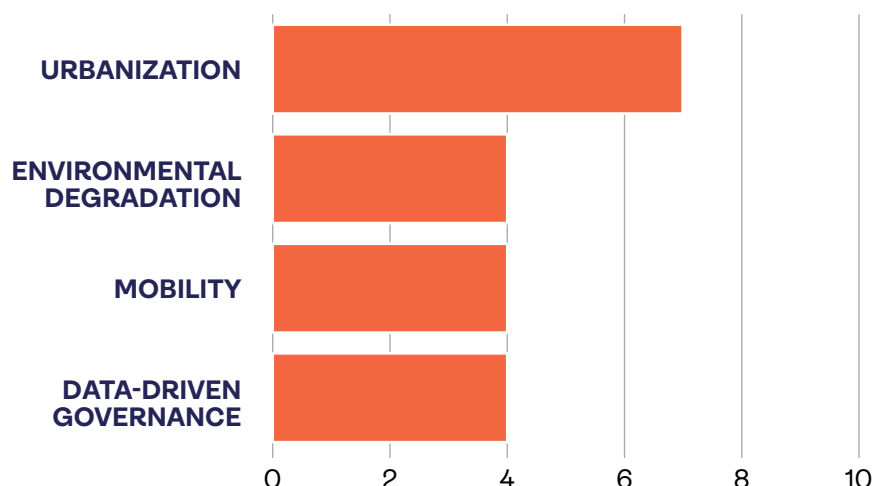
The next section introduces the most significant challenges reported across the different continents.



CHALLENGES

LATIN AMERICA

FIGURE 7. CROSS-CUTTING URBAN SYSTEM CHALLENGES IDENTIFIED IN LATIN AMERICA



The most prominent challenge in LAC was **urbanization**, with six cities reporting urban sprawl and one city reporting urban growth. Urbanization is putting pressure on public transport systems, critical infrastructure, public services such as provision of water, waste management and energy, economic opportunities, and housing stock. Simultaneously, it is causing a reduction in biodiversity and agricultural land, and leading to the heat island effect, socio-territorial conflict, socio-economic segregation with new gated communities contrasting with informal settlements, an increase in emissions as commutes are becoming longer, and the erosion of the historic central business districts, affecting economic activity.



Environmental degradation is also a prevalent challenge for LAC cities. Deforestation, the expansion of urban areas, urban sprawl, and clearing of native plants have resulted in a loss of biodiversity and ecosystems, fragmented habitats and habitat loss, the abandonment of orchards and vineyards, loss of urban tree cover and wetland areas, prevalence of the urban heat island effect, and increased vulnerability to flash flooding and mudslides in areas where plants have been cleared.



Mobility was cited by five cities as a challenge. Cities reported the dependence on fossil fuel consuming transport and reliance on private vehicles, lack of access to public transport and provision of public transport, lack of cycling infrastructure, and urban sprawl leading to high levels of traffic congestion, GHG emissions, and stress.

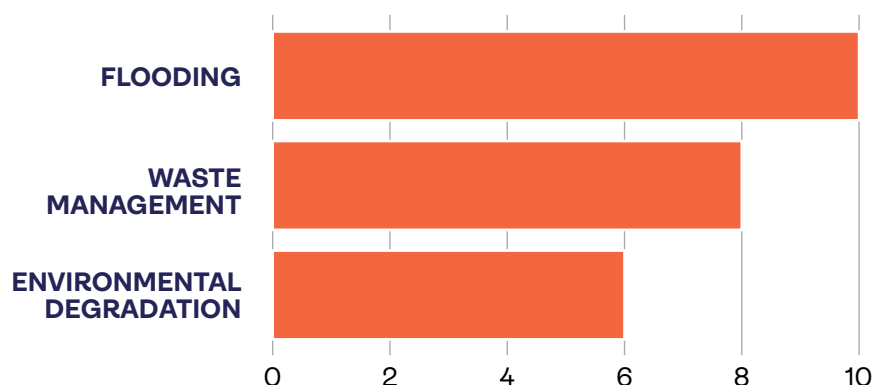


Data-driven decision-making was also identified as a challenge by five cities. Cities were reported to lack an integrated data platform, with multiple parallel platforms being available in some cases. In addition, siloed smart city components and siloed departmental data is impeding comprehensive planning and decision making.



ASIA

FIGURE 8. CROSS-CUTTING URBAN SYSTEM CHALLENGES IDENTIFIED IN ASIA



Flooding emerged as the most frequently reported challenge among Asian cities, driven by a combination of natural and human-induced factors. Key causes include heavy precipitation, monsoon seasons, and extreme weather events such as typhoons, compounded by geographic features like flat or low-lying topography, mountainous terrain, and the presence of numerous rivers. Additional contributors include land subsidence, high tides, impervious surfaces, poor urban drainage, and the dumping of solid waste and sewage. Urban development on flood-prone land and land use changes further exacerbate flood risks. The impacts of flooding are wide-ranging, resulting in landslides, inundated watersheds, damage to infrastructure, economic losses, and, in severe cases, fatalities.



Waste management was identified as the second most commonly reported challenge in Asian cities, stemming from both infrastructural and systemic limitations. Contributing factors include insufficient management capacity, improper disposal practices, and the rapid pace of urbanization, which increases the volume and complexity of waste. Many cities face inadequate sewage treatment infrastructure, with limited coverage and capacity, and often fail to differentiate between types of waste, further straining the system. The overload of landfills and the practice of burning waste exacerbate environmental and health risks. These issues result in the direct discharge of industrial wastewater into watersheds, water pollution, and the spread of waterborne diseases. Additionally, untreated waste entering rivers, air pollution from waste burning, and the overall inefficiency of current waste management systems contribute to the degradation of coastal ecosystems and pose significant public health threats.

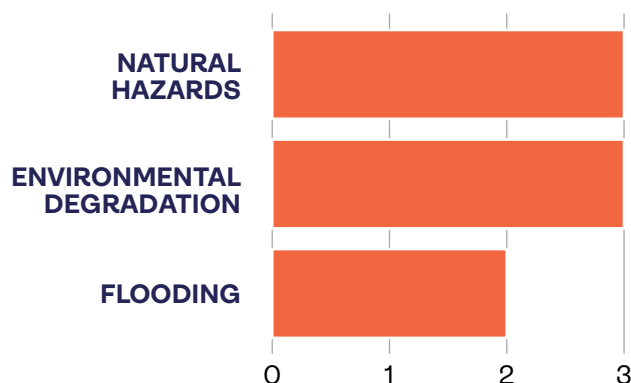


Environmental degradation ranked as the third most frequently reported challenge in Asian cities, largely driven by rapid urban development and population growth. High land consumption per capita and the expansion of peri-urban areas have led to increased pressure on natural resources and ecosystems. Contributing factors also include ongoing urbanization, exposure to natural hazards, untreated solid waste, and pollution of river systems. These dynamics have resulted in a marked reduction in green spaces, placing biodiversity and habitats at significant risk. Freshwater systems and mangrove ecosystems face degradation, while soil, water, and air contamination further compound environmental stress. The loss of vegetation cover, in particular, has heightened vulnerability to flooding, highlighting the interconnected nature of urban expansion and environmental decline.



AFRICA

FIGURE 9. CROSS-CUTTING URBAN SYSTEM CHALLENGES IDENTIFIED IN AFRICA



In African cities, **natural hazards** such as floods, droughts, extreme temperatures, fires, sea level rise, and landslides were identified as the most significant challenges. These hazards are intensified by human activities including extensive land development, overexploitation of natural resources, pollution, and rapid urban expansion, which contribute to the degradation of wetlands and reduced surface water retention. High elevation combined with intense rainfall leads to flooding, while deforestation, especially in peninsular forests and mangroves, along with inadequate water runoff systems and waste pollution, further exacerbate environmental vulnerability. The consequences are severe and wide-ranging, including health problems, reduced labor productivity, water and food shortages, ecological degradation, and threats to economic resilience and the tourism sector. Additionally, these hazards result in the destruction of infrastructure, substantial economic losses, population displacement, and the loss of lives and livelihoods.



Environmental degradation was reported as one of the most critical challenges faced by African cities, alongside natural hazards. This issue is primarily driven by rapid city expansion, population growth, and urbanization, which contribute to widespread land use changes and exert significant pressure on natural habitats and ecosystem services. Key drivers include large-scale deforestation, vegetation clearance, water stress in agriculture, and the continual expansion of built-up areas. These activities reduce forest cover and strain the capacity of ecosystems to function effectively. The resulting impacts are extensive: livelihoods and local industries suffer due to resource depletion, habitats are lost or fragmented, and native species decline in both variety and abundance. Wetlands lose their capacity to support biodiversity and deliver essential ecosystem services such as water filtration and flood control. Additional consequences include a lack of recreational green space, rising regional temperatures, coastal storm intensification, and a heightened risk of landslides.



Infrastructure challenges were also prominently reported across two African cities, with deficiencies spanning multiple essential services. Key causes include inadequate systems for waste management, unreliable electricity and water supply, insufficient housing, limited access to healthcare facilities, and underdeveloped transport infrastructure. Road congestion further compounds these issues, while gaps in conservation infrastructure undermine environmental sustainability. Together, these inadequacies hinder urban functionality, reduce the quality of life for residents, and limit cities' capacity to respond effectively to rapid urbanization and environmental stressors.



**URBAN
SH/FT**

ISUDA AGGREGATED
ANALYSIS REPORT FOR
URBANSHIFT CITIES

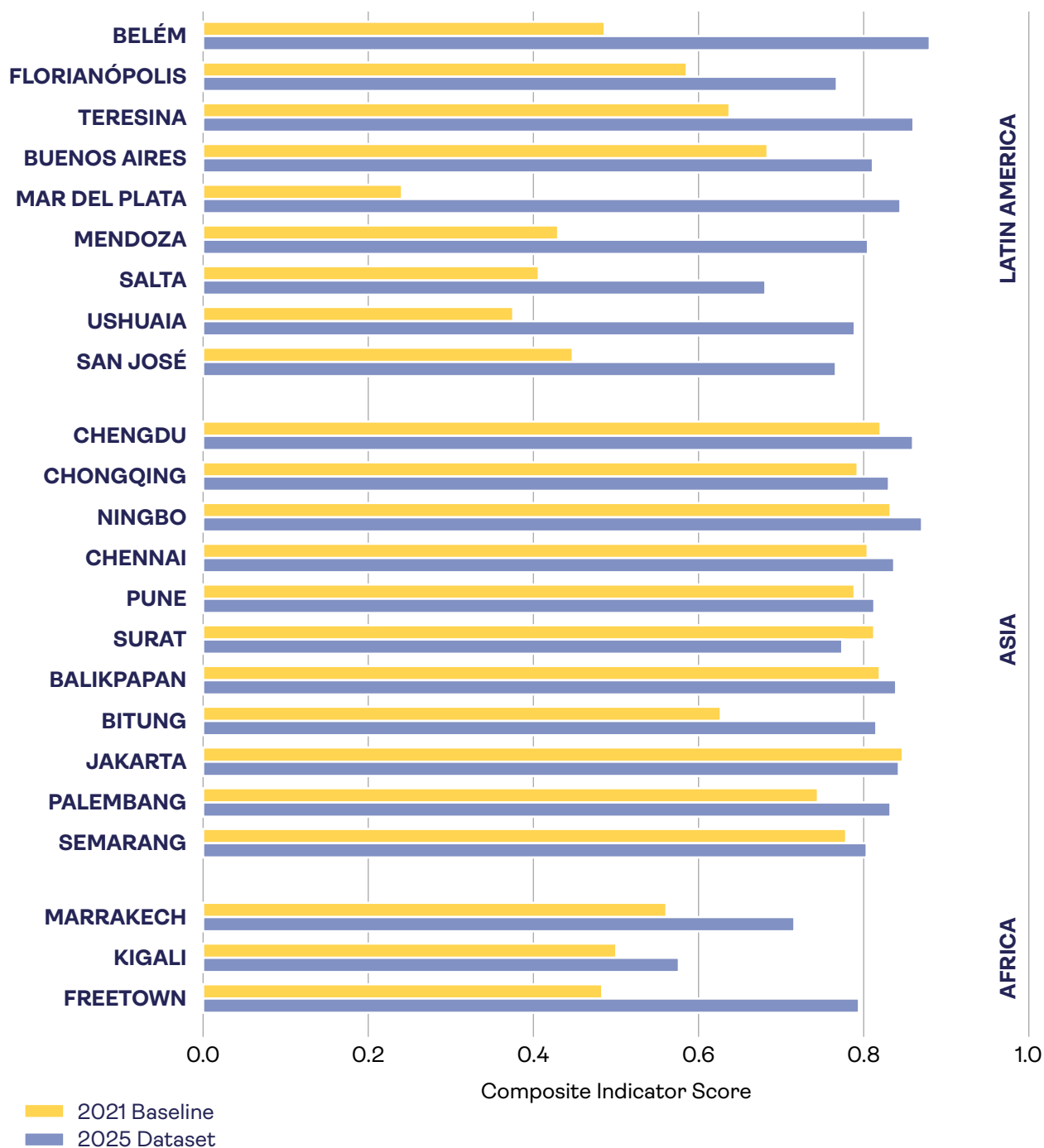
Findings and Trends



The resulting composite indicators highlight key implementation trends across 23 surveyed cities. By aggregating these indicators, the visualizations provide a clear comparative analysis of how each dimension has evolved relative to the 2021 baseline.

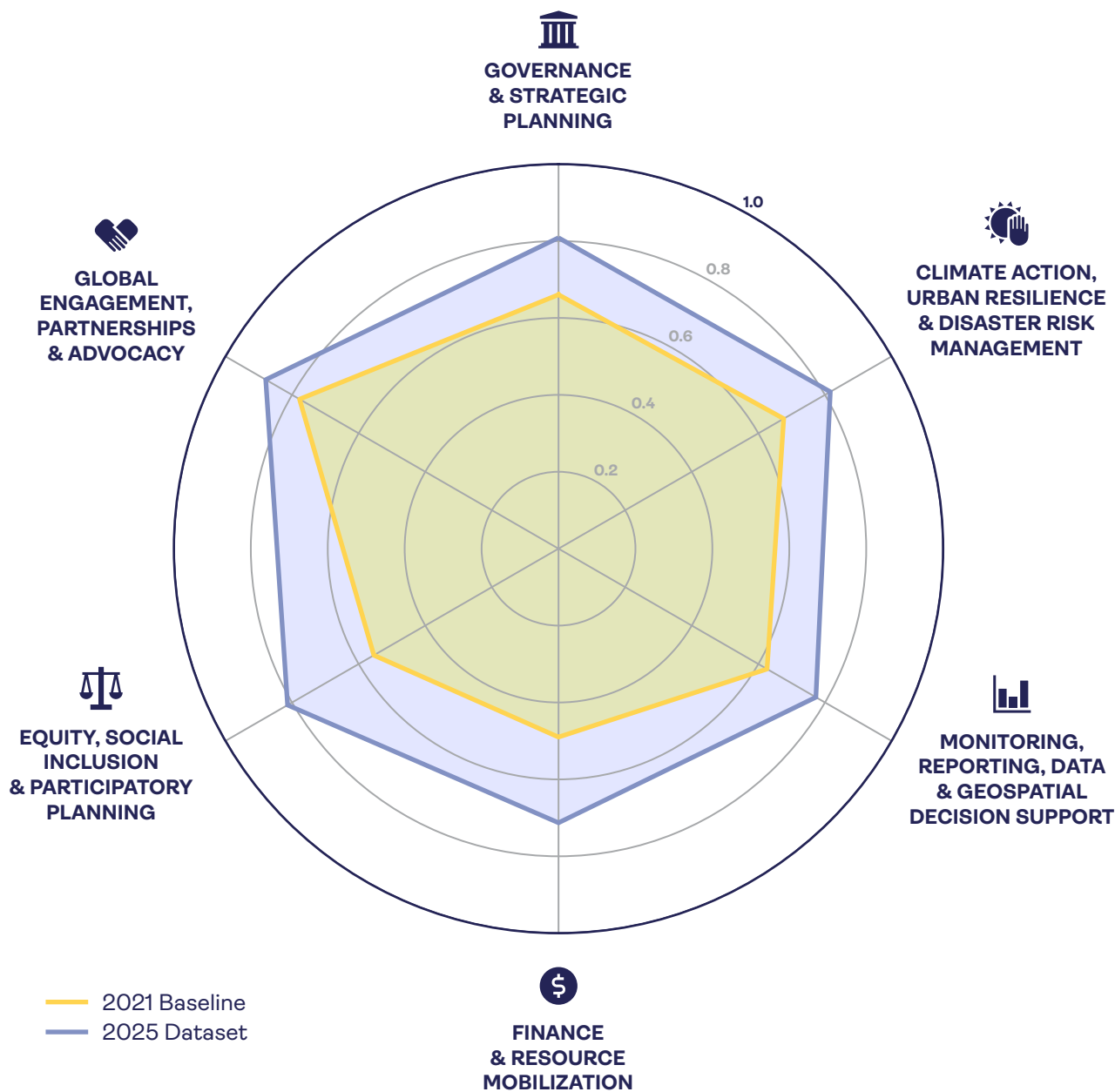
As illustrated in the figure below, the **ISUDA composite indicator** scores between 2021 and 2025 show an improvement for the majority. Specifically, 20 out of the 23 cities demonstrated improvement, with only Surat and Jakarta experiencing a slight decrease in the overall scores.

FIGURE 10. COMPARISON OF ISUDA COMPOSITE INDICATOR BETWEEN 2021 AND 2025



By averaging the score in each dimension, the figure below demonstrates the dimension profile across all cities. An upward trend from the baseline to the targeted year was seen across all dimensions. Notably, the dimensions of ‘Finance & Resource Mobilization’, and ‘Equity, Social Inclusion & Participatory Planning’ appeared with the most significant increase. To provide a more detailed view, individual city profiles tracking these dimensional shifts are attached in [Annex 2](#), detailing the profile of each city between 2021 and 2025.

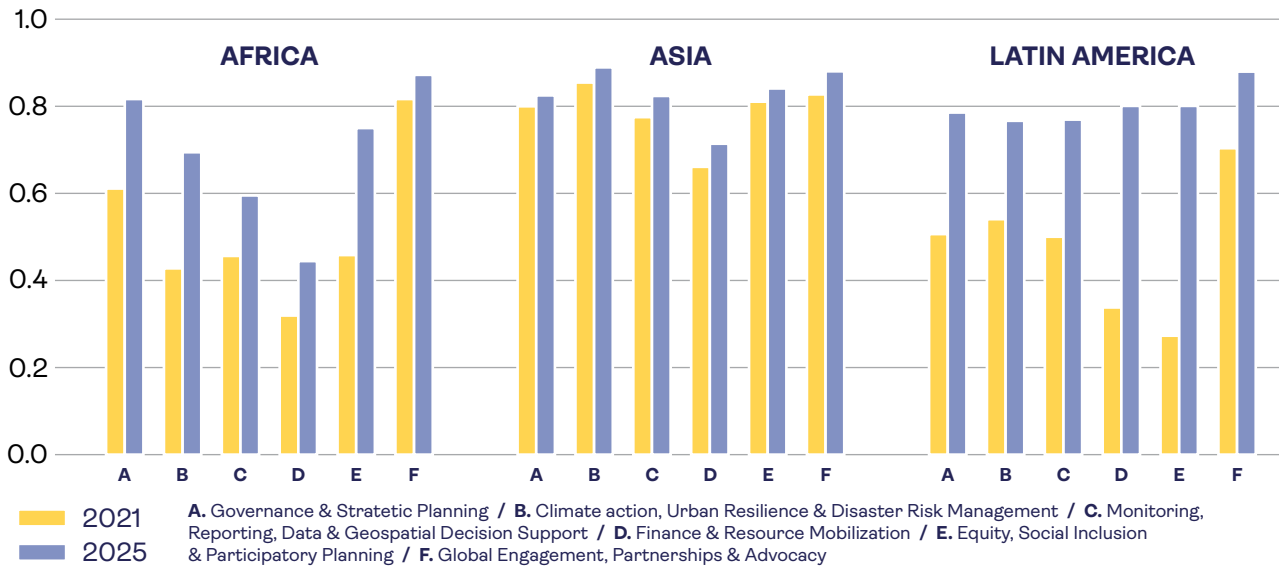
FIGURE 11. DIMENSION PROFILE BETWEEN 2021 AND 2025



The figure below shows the dimension profile across different continents. When averaging the scores across regions, ‘Global Engagement, Partnerships, and Advocacy’ consistently emerges as the dimension with the highest average score across all continents.

Asia maintains high scores and demonstrates steady improvement across most dimensions, notably achieving the highest score in **‘Monitoring, Reporting, Data, and Geospatial Decision Support.’** In contrast, Africa presents the most uneven profile; specifically, **‘Finance & Resource Mobilization’** remains significantly lower than the other two continents. Latin America demonstrates strong growth in **‘Finance & Resource Mobilization’** and **‘Equity, Social Inclusion & Participatory Planning’**.

FIGURE 12. AVERAGE DIMENSION SCORES BY CONTINENT BETWEEN 2021 AND 2025



INTERPRETATION OF COMPOSITE RESULTS

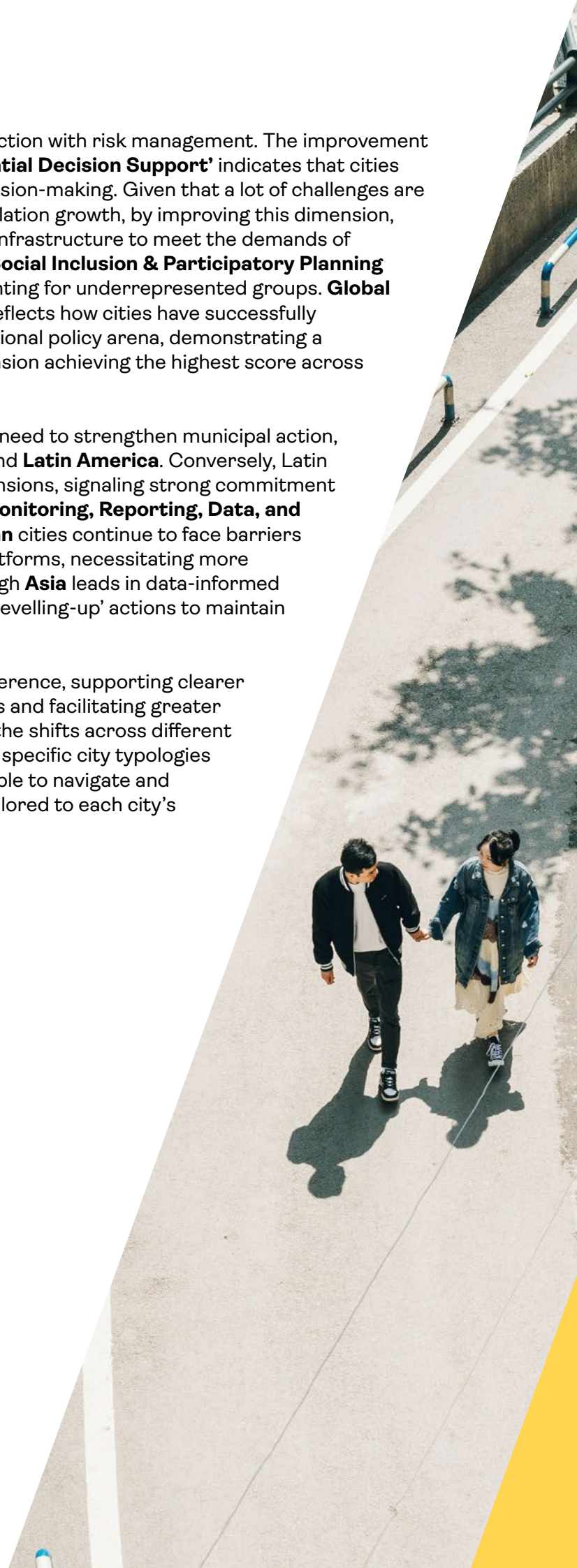
Overall, through the construction of composite indicators, this report provides an overview rooted in data-driven insights to identify emerging gaps, further highlighting the contributions of the ISUDA. The six dimensions categorized in this report effectively encompass all indicators, providing a comprehensive lens through which to evaluate implementation. By examining each dimension, these visualizations allow cities to conduct progress tracking and benchmarking against their 2021 baselines, enabling them to quickly identify which specific areas of the ISUD have fallen behind.

The findings and trends suggest that improvements across most cities reflect a growing commitment to ISUDA. In particular, progress in **Governance & Strategic Planning** highlights the overarching focus of the GPSC on integrated planning, as demonstrated to some extent through city-level plans. These developments also suggest efforts to strengthen multilevel governance, enabling better coordination of policies across different jurisdictions and administrative levels. Analysis of **Climate Action, Urban Resilience, and Disaster Management** is particularly crucial, as climate change significantly exacerbates natural hazards and multifaceted challenges. The progress in this dimension demonstrates a rising awareness of the

need to develop plans that integrate climate action with risk management. The improvement of **‘Monitoring, Reporting, Data, and Geospatial Decision Support’** indicates that cities are increasingly leveraging data for urban decision-making. Given that a lot of challenges are related to uncontrolled urbanization and population growth, by improving this dimension, cities can better estimate and arrange urban infrastructure to meet the demands of rapid population growth. Progress in **Equity, Social Inclusion & Participatory Planning** demonstrates an inclusive shift toward accounting for underrepresented groups. **Global Engagement, Partnerships, and Advocacy** reflects how cities have successfully connected with and responded to the international policy arena, demonstrating a positive trend further evidenced by this dimension achieving the highest score across all analyzed areas.

Africa’s uneven profile highlights a persistent need to strengthen municipal action, as most indicators trail behind those in **Asia** and **Latin America**. Conversely, Latin America shows robust growth across all dimensions, signaling strong commitment to ISUD. However, despite improvements in **Monitoring, Reporting, Data, and Geospatial Decision Support**, **Latin American** cities continue to face barriers from siloed data and the lack of integrated platforms, necessitating more targeted digital integration. Meanwhile, although **Asia** leads in data-informed decision support, these cities must prioritize ‘levelling-up’ actions to maintain and scale their current momentum.

This “big picture” of dimensions enhances coherence, supporting clearer communication between various urban actions and facilitating greater coordination among cities. By acknowledging the shifts across different dimensions, aligned with the understanding of specific city typologies and challenges, this framework makes it possible to navigate and provide context-specific recommendations tailored to each city’s unique background.



Recommendations



A QUICK GUIDE TO USING THE RECOMMENDATIONS

To move from data to delivery, this report provides a structured roadmap (see Figure 13, next page) designed for two primary audiences:

- **Local Government Officials & Policymakers:** Use this to prioritize high-impact actions and streamline decision-making.
- **Urban Planners & Practitioners:** Use this to support actionable practices into city's planning and development.

STEP 1: IDENTIFY ISUDA DIMENSIONS

The first step is to identify the key dimension based on the aggregated analysis result introduced in the Findings and Trends section.

By synthesizing complex, multi-layered indicators into coherent dimensions, cities can obtain a holistic diagnostic of their developmental status, which they can use to seek actionable and contextually appropriate recommendations. This macro-level visualization enables:

- **Diachronic Assessment:** Based on the visualizations, cities are able to track whether they are making progress relative to the baseline and to identify areas where additional attention or resources may be most effectively directed.
- **Comparative Benchmarking:** These graphs also allow cities to situate the ISUDA dimensions within regional or national peer cohorts and identify comparable contexts where good practices can be replicated.
- **Strategic Alignment:** Cities can identify underperforming dimensions, enabling the immediate deployment of the targeted recommendations provided herein. At the same time, high-performing dimensions can be leveraged as foundations for advanced “levelling-up” strategies that underpin long-term sustainable development.

STEP 2: IDENTIFY CONTEXT SPECIFIC CONDITIONS

Second, ISUDA identifies the challenges clusters, including existing urban system challenges and cross-cutting enablers. By classifying urban environments through **Geographic Typology, Development Context, and Infrastructure/Density Conditions**, the framework moves beyond “one-size-fits-all” solutions. This is reinforced by a **systematic tagging framework**, ensuring that policy interventions are calibrated to the specific socio-spatial realities of the city. Cities can refer to the tagging system to identify context-specific conditions, to better seek suitable recommendations for future practices.

STEP 3: SEEK RECOMMENDATIONS

Third, based on the identified context-specific conditions, cities can tailor recommendations more specifically. The tags provided under the recommendations allow users to match their context with the suggested practices.

To determine which actions to take and which recommendations to follow, the report differentiates guidance across different groups of stakeholders.

Local Governments

Readers representing local governments can first follow the **Key Recommendations** and **Specific Recommendations** for each challenge cluster, to address challenges and leverage cross-cutting enablers, in order to enhance overall sustainable urban development. Aligned with these specific recommendations, **enabling conditions at the local level**, along with conditions that **support long-term sustainable urban development**, are provided in [Annex 3](#). For some frequently reported challenge clusters, this report also provides local governments with **levelling-up strategies and strategic entry points** in [Annex 4](#) to help determine which actions to initiate or further advance.

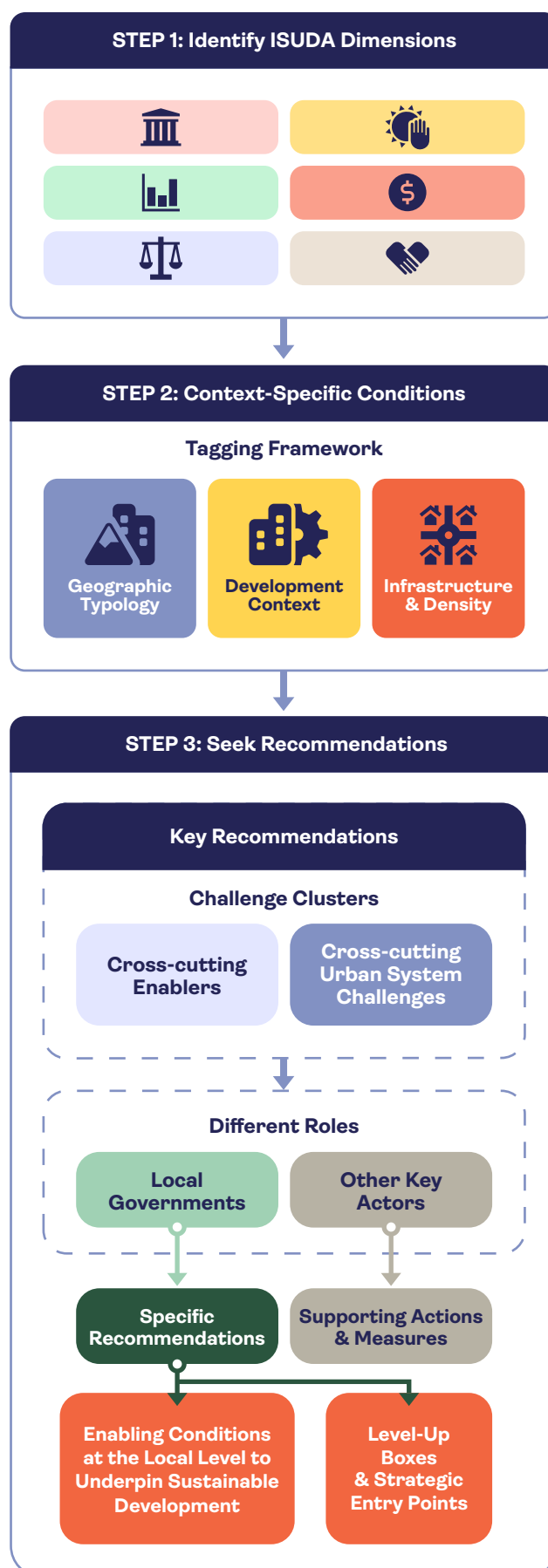
Other Groups of Practitioners

For practitioners operating within the broader urban ecosystem (market and civil society implementers, boundary organizations, national government and development agencies and financial institutions), the focus of recommendations shifts toward supporting measures and actions. Their contributions are defined by their ability to support local governments through:

1. Developing Capacity Modules and Executing Capacity Building Events
2. Facilitating Peer Exchanges
3. Knowledge Brokering Including Identification and Dissemination of Good Practices with High Replication Potential
4. Support Development - Application of Innovative Solutions and Piloting
5. Support Development of A Shared Pool of Tools
6. Support Access to Finance and Resource Mobilization
7. Strengthening Legitimacy and Accountability Mechanisms
8. Promoting Participation and Inclusivity

Together, these steps provide a structured basis for interpreting city performance and context, guiding readers toward the targeted recommendations that follow.

FIGURE 13. ROADMAP FOR PRACTITIONERS



OVERVIEW

The recommendations presented in this report are grounded in a structured synthesis of empirical findings and expert input. They have been designed to address the challenges identified in the ISUDAs and the ISUD dimensions. They are organized into two complementary categories. First, challenge-driven recommendations are derived directly from the persisting and emerging challenges identified through the ISUDAs. These respond to the specific institutional, sectoral, and systemic constraints articulated by city leaders and urban practitioners across the 23 cities. Second, cross-cutting enablers are informed by expert consultations with ICLEI's thematic leads and the broader literature on sustainable urban transitions. This process ensures technical rigour and practical relevance. The recommendations are structured to address existing challenges and enhance the current ISUD by leveraging key enabling factors, as outlined below:

- **Challenge 1:** Persistent Urban Inequality and Spatial Exclusion
- **Challenge 2:** Escalating Climate Risk and Ecosystem Degradation
- **Challenge 3:** Strained and Fragmented Urban Systems
- **Challenge 4:** Carbon-Intensive Energy and Economic Systems
- **Cross-Cutting Enabler 1:** Governance and Strategic Planning
- **Cross-Cutting Enabler 2:** Geospatial Data and Digitalization
- **Cross-Cutting Enabler 3:** People-Centered and Inclusive Governance
- **Cross-Cutting Enabler 4:** Innovative Finance
- **Cross-Cutting Enabler 5:** Institutional Capacity and Partnership Development

In addition, this report provides “**Enabling**” and “**Long-Term Sustainability Conditions**” in [Annex 3](#); and “**Level Ups**” and “**Strategic Entry Points**” in [Annex 4](#):

- **Enabling Conditions:** conditions aligned with the provided recommendations to ensure successful and seamless implementation.
- **Long-Term Sustainability Conditions:** provide advanced actions for cities that are already implementing a given recommendation and are seeking to deepen, scale, or institutionalize their efforts.
- **Strategic Entry Points:** identify foundational steps for cities that have not yet engaged in a particular thematic area, offering accessible starting points that enable integrated and incremental progress.
- **Level Ups:** provide advanced actions for cities that are already implementing a given recommendation and are seeking to deepen, scale, or institutionalize their efforts.

Together, these features enhance usability by allowing readers to tailor the recommendations according to their city's current capacity, commitment level, and stage of implementation.

OPERATIONAL TYPOLOGY FRAMEWORK FOR CONTEXT-SENSITIVE IMPLEMENTATION

Integrated sustainable urban development is inherently context-dependent. While many urban challenges are globally shared (climate vulnerability, infrastructure deficits, socio-spatial inequality, economic restructuring), the feasibility, sequencing, and design of policy interventions are significantly shaped by local geographic, developmental, and infrastructural conditions.

To enhance the operational usability of this report across diverse urban contexts, each recommendation is accompanied by a standardized tagging system. The **tagging framework** serves three primary purposes:

1. **Contextualization:** It signals where particular structural conditions materially affect implementation.
2. **Comparability:** It allows cross-city learning among cities that share similar typological characteristics.
3. **Navigability:** It enables practitioners and decision-makers to filter recommendations according to their local realities.

The framework is organized into three analytical dimensions:

1. Geographic Typology
2. Development Context
3. Infrastructure & Density Conditions

These dimensions were selected because aggregated assessment findings across the 23 cities demonstrated that these variables most consistently influenced implementation constraints, risk exposure, and investment prioritization.

Importantly, tags are applied selectively. Not all recommendations require contextual differentiation. Tags are assigned only where contextual conditions are likely to materially influence feasibility, sequencing, or design considerations.





GEOGRAPHIC TYPOLOGY

Geographic conditions represent relatively fixed structural variables. Unlike governance arrangements or economic strategies, these conditions cannot be altered and therefore require adaptation-oriented planning. Tagging by geography therefore prevents inappropriate policy transfer and promotes ecologically responsive implementation.

#Coastal/DeltaCity

Cities located along coastlines, facing challenges such as sea-level rise, erosion, and marine ecosystem stress.

#HighlandCity

Urban areas located at high elevations, often facing space constraints, landslide risks, or access challenges.

#DrylandCity

Cities located in arid or semi-arid regions, characterised by low and variable rainfall, high evapotranspiration, and chronic water scarcity.

DEVELOPMENT CONTEXT



Urban development trajectories produce path dependencies. By incorporating development context, the tagging system acknowledges that cities at different stages of transformation require differentiated policy instruments.

#RapidUrbanization

Cities experiencing fast population growth and urban expansion, often outpacing infrastructure.

#PostIndustrial

Cities transitioning from manufacturing to service economies, often with brownfields or economic restructuring.

#InformalSettlements

Areas of unregulated housing, lacking secure tenure or full access to basic services.

#NewTown

Planned urban extensions or entirely new cities often developed for decongestion or industrial purposes.

#LandScarce

Urban areas with limited land for expansion, facing high land costs or redevelopment pressure.

INFRASTRUCTURE & DENSITY



Infrastructure and density tags reflect the maturity of service networks and the spatial form of the city, both of which directly shape technical feasibility and cost structures. The effectiveness of many urban interventions depends on baseline service coverage, connectivity, and settlement patterns. These tags therefore guide users toward recommendations aligned with their city's infrastructural readiness and spatial configuration.

#UnderServed

Areas with insufficient infrastructure or access to utilities and public services.

#InfrastructureBacklog

Cities where basic infrastructure is deteriorating, overloaded, or yet to be fully extended.

#TransitRich

Well-served by public transport and multi-modal mobility options.

#TechReady

Urban areas with strong digital infrastructure, open data, or smart city initiatives in place.

#HighDensityZone

Areas with a large number of people or buildings per square kilometer, requiring efficient infrastructure and services.

#LowDensityZone

Suburban or peri-urban areas with dispersed development patterns, typically requiring longer service delivery distances.



CHALLENGE 1: PERSISTENT URBAN INEQUALITY AND SPATIAL EXCLUSION

In many cities, spatial inequality shapes access to housing, infrastructure, public services, mobility, and economic opportunity. Informal settlements and underserved neighborhoods often face insecure tenure, limited service coverage, exposure to environmental risks, and a lack of employment opportunities.

Rising land values, rapid urban growth, and infrastructure backlogs can intensify these disparities. Women, youth, informal workers, and marginalized groups may face additional barriers related to safety, mobility, and participation in economic life.

These dynamics are influenced by land market pressures, fiscal limitations, regulatory frameworks, and historical development patterns. Integrated upgrading combines tenure recognition, infrastructure investment [34], housing improvement [35], and economic mobility [36] within a coordinated territorial strategy, to address urban inequality.

KEY RECOMMENDATION:

Advance Integrated Upgrading of Informal and Underserved Areas



LOCAL GOVERNMENTS CAN:

1. Expand Affordable and Well-Located Housing Options

#LandScarce

#RapidUrbanization

#TransitRich

#HighDensityZone

- **Use public land inventories** to prioritize affordable housing near transit corridors.
- **Adopt inclusionary zoning policies** requiring affordable units in new developments.
- **Provide density bonuses** or tax incentives for mixed-income housing.
- **Expand public-private partnerships** for affordable housing development.
- **Monitor affordability** through compliance audits.

Recommendations for strategic entry or levelling up are presented under the **Affordable Housing** theme in [Annex 4](#).

2. Close Service Gaps in Underserved Communities

#UnderServed

#InfrastructureBacklog

#InformalSettlements

- **Upgrade water and sanitation infrastructure** in informal settlements.
- **Expand sewerage and stormwater systems** in flood-prone neighborhoods.
- **Improve solid waste management** to prevent contamination.
- **Extend affordable public transport routes** to underserved areas.
- **Establish mobile food markets** and support community food cooperatives.

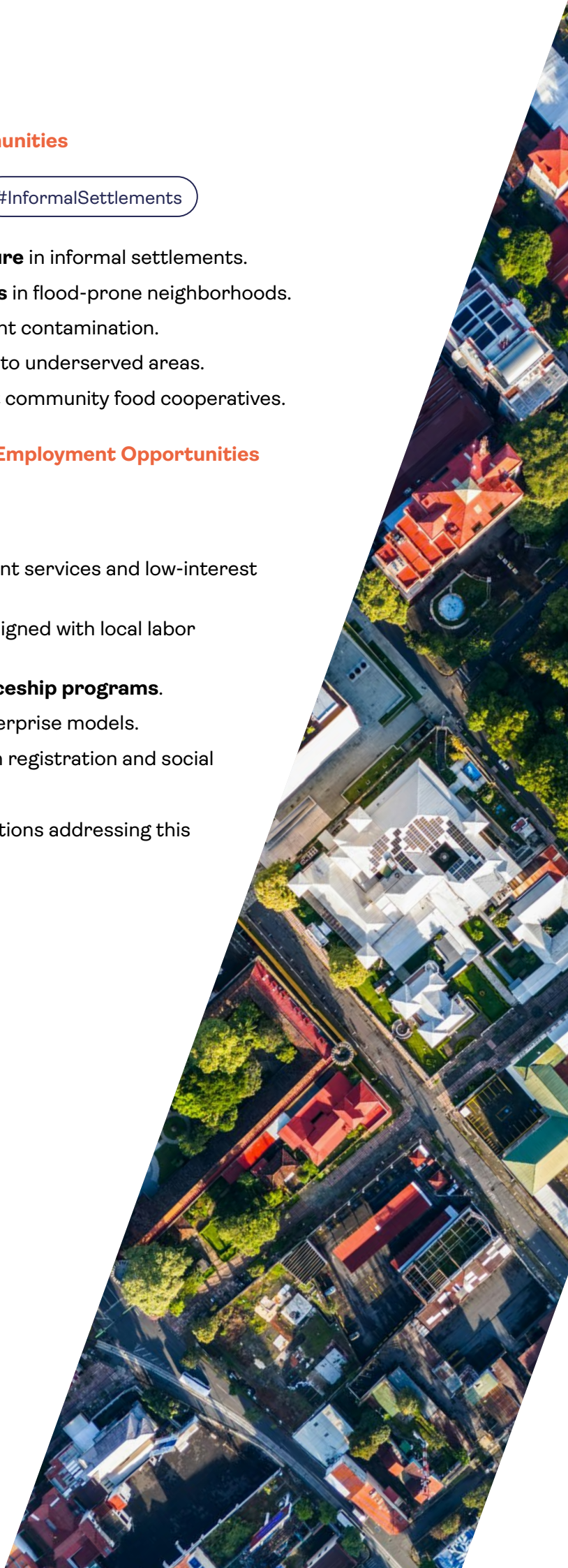
3. Strengthen Economic Inclusion and Local Employment Opportunities

#RapidUrbanization

#InformalSettlements

- **Support SMEs** through business development services and low-interest loan facilitation.
- **Expand vocational and technical training** aligned with local labor markets.
- **Establish youth employment and apprenticeship programs.**
- **Promote microfinance** and cooperative enterprise models.
- **Formalize informal sector workers** through registration and social protection access.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).



THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– NGOs conducting sanitation behavior change campaigns; and facilitating participatory planning and social mediation. – Community-based organizations supporting settlement mapping and infrastructure prioritization. – Community cooperatives pooling savings and managing enterprises – Civil society organizations conducting social audits and advocacy – Waste management companies modernizing collection systems. – Agricultural cooperatives strengthening farmer-to-market supply chains. – Transport operators adopting safety and reporting mechanisms. – Private employers promoting inclusive hiring practices.
Boundary Organizations	– Academic institutions evaluating inclusion outcomes.
National Government	– National governments enabling legal tenure frameworks and co-financing programs – National housing agencies aligning subsidies with local spatial priorities.
Development Agencies & Financial Institutions	– Microfinance institutions offering housing improvement loans. – Development partners funding upgrading pilots and institutional strengthening – Private developers incorporating mixed-income housing models. – Housing finance institutions offering low-interest mortgages and rental guarantees – Impact investors supporting long-term affordable housing portfolios. – Commercial banks are expanding financial inclusion products. – Chambers of commerce offering mentoring and networking. – Private firms providing apprenticeships and local hiring commitments. – Development agencies funding innovation hubs and incubators. – Public utilities implementing service-level agreements in low-income areas.



CHALLENGE 2: ESCALATING CLIMATE RISK AND ECOSYSTEM DEGRADATION

Cities are increasingly exposed to climate-related hazards, including flooding, heatwaves, landslides, droughts, and sea-level rise. At the same time, urban expansion and environmental degradation can weaken natural systems such as wetlands, forests, river basins, and coastal buffers that protect urban areas from climate impacts.

Vulnerable communities often face disproportionate exposure to climate risks due to settlement patterns, infrastructure gaps, and limited access to services. Climate events can disrupt water systems, damage infrastructure, strain public health systems, and generate significant economic losses.

These risks are shaped by evolving climate conditions, land-use decisions, ecological pressures, and fiscal constraints. Building climate-resilient urban ecosystems requires prioritising water systems as a central component [37], strengthening resilient infrastructure to withstand extreme weather events [38], enhancing community preparedness [39], and systematically integrating climate risk considerations into spatial and financial planning frameworks [40]. Strengthened urban ecosystems contribute to flood risk reduction, heat stress mitigation, biodiversity enhancement, and improved water security [41].

KEY RECOMMENDATION:

Building Climate-Resilient Urban Ecosystems and Water Security



LOCAL GOVERNMENTS CAN:

1. Integrate Climate Risk into Urban Planning and Investment Decisions

#Coastal/DeltaCity

#HighlandCity

#DrylandCity

#TechReady

- **Conduct and regularly update climate vulnerability assessments** and risk maps (covering floods, heat, drought, and landslides)
- **Update zoning regulations** to strictly restrict development in high-risk zones and legally protect environmentally sensitive watersheds and ecosystems
- **Integrate climate adaptation into master plans** and capital investment programs.
- **Align local climate action plans** with national climate strategies and budgeting cycles.
- **Develop formal biodiversity strategies** and action plans aligned with urban climate objectives, as demonstrated by Ningbo's Biodiversity Conservation Strategy and Action Plan.

- **Pilot sponge-city or stormwater-sensitive urban design studies** to inform flood management approaches, as undertaken in Balikpapan.
- **Integrate nature-based solutions** into ongoing flood protection or wetland projects, as demonstrated in Palembang.
- **Launch river basin and watershed restoration programs.**
- **Monitor water quality** and publish results through open data platforms.
- **Improve industrial wastewater management** through stricter discharge standards.
- **Promote efficient agricultural water use** in peri-urban zones.

Recommendations for strategic entry or levelling up are presented under the **Climate Resilience and Risk Management** theme in [Annex 4](#).

2. Restore and Protect Natural Ecosystems as Urban Buffers

#Coastal/DeltaCity

#HighlandCity

#DrylandCity

#LandScarce

#HighDensityZone

- **Protect wetlands, mangroves, riparian buffers and forested areas** through zoning and conservation policies.
- **Establish ecological corridors** and biodiversity networks in urban expansion plans.
- **Launch urban reforestation** and native vegetation programs.
- **Restore degraded land**, including brownfields and riverbanks, through ecological rehabilitation.
- **Integrate nature-based solutions** (e.g., bioswales, green roofs, permeable pavements) into public works.
- **Earmark dedicated municipal budget lines** for nature-based solutions (NbS) (not only project-by-project), to sustain implementation and maintenance [42].
- **Use payment-for-ecosystem-services** or “water fund” style mechanisms (where feasible) to co-finance watershed protection and restoration with utilities and major water users [42].

Recommendations for strategic entry or levelling up are presented under the **Nature-based Solutions** theme in [Annex 4](#).

3. Upgrade Climate-Resilient Infrastructure and Water Systems

#InfrastructureBacklog

#UnderServiced

#Coastal/DeltaCity

#HighlandCity

#DrylandCity

- **Upgrade drainage systems** and expand stormwater retention capacity in flood-prone areas.



- **Separate stormwater and wastewater networks** where feasible.
- **Implement decentralized and nature-based wastewater treatment solutions** in underserved areas [43].
- **Strengthen building codes** to incorporate flood-resistant and heat-adaptive design standards.
- **Construct resilient public facilities**, including flood-resistant schools and health centers.

4. Strengthen Early Warning Systems and Community Preparedness

#TechReady

#UnderServed

#Coastal/DeltaCity

#HighlandCity

#DrylandCity

- **Establish early warning systems** for floods, storms, heatwaves, and landslides.
- **Develop and test emergency response** and evacuation plans.
- **Conduct public awareness campaigns** on climate risk and preparedness.
- **Designate cooling centers and emergency shelters** in vulnerable neighborhoods.
- **Engage communities** in climate education and preparedness training.
- **Institutionalize recurring drills** and system testing (e.g., annual/seasonal), and link results to updates of preparedness plans [42].

For enabling and long-term sustainability conditions addressing this challenge, please refer to [**Annex 3**](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Environmental NGOs leading community-based reforestation and stewardship initiatives. – Community organizations leading volunteer networks and drills. – Community water user associations participating in governance decisions. – Agricultural cooperatives adopting agroforestry and conservation practices in peri-urban areas, and supporting water-efficient irrigation practices. – Private developers integrating green infrastructure into site design. – Construction companies implementing updated climate-resilient standards. – Technology providers deploying real-time monitoring systems for rainfall and water levels. – Telecommunications providers disseminating alerts through SMS and digital platforms. – Industrial operators complying with and investing in wastewater pre-treatment systems.
Boundary Organizations	– Universities and research institutions conducting risk modeling, scenario analysis, and performance monitoring. – International climate platforms supporting reporting and benchmarking. – Engineering and planning firms incorporating climate risk into infrastructure design, such as resilient drainage and water systems.
National Government	– National meteorological agencies providing climate projections and hazard data. – National governments aligning regulatory frameworks and funding streams with local adaptation plans. – National regulatory agencies aligning building codes with climate adaptation objectives. – Meteorological agencies providing real-time monitoring and forecasts. – Public health agencies coordinating heatwave and disease response strategies.
Development Agencies & Financial Institutions	– Utilities and water agencies co-financing watershed protection. – Humanitarian agencies supporting disaster preparedness capacity-building. – Regional authorities coordinating watershed governance across jurisdictions. – Development banks and climate funds financing ecosystem restoration. – Climate finance institutions providing concessional loans for resilient infrastructure.



CHALLENGE 3: STRAINED AND FRAGMENTED URBAN SYSTEMS

Rapid urbanization and spatial expansion can place increasing pressure on infrastructure, mobility networks, water systems, waste services, and public facilities. When land-use planning, infrastructure investment, and service delivery are not fully aligned, cities may experience congestion, inefficient network expansion, service backlogs, and rising maintenance costs.

Fragmented institutional mandates and limited lifecycle planning can further weaken system performance. In some cases, growth at the urban periphery increases infrastructure extension costs and strains municipal budgets. Tourism and economic activity can add seasonal or localized pressure to already constrained systems.

Advancing integrated urban systems planning and infrastructure requires coordinated spatial planning; modernization of reliable and resource-efficient water and waste systems [44]; enhancement of sustainable and efficient mobility networks [45]; and the systematic integration of tourism into urban planning framework [46]. These efforts should be reinforced through strengthened asset management practices to ensure long-term performance, efficiency, and resilience.

KEY RECOMMENDATION:

Advance Integrated Urban Systems Planning and Infrastructure Modernization



LOCAL GOVERNMENTS CAN:

1. Provide Integrated Land-Use Planning

#RapidUrbanization

#LandScarce

#HighDensityZone

#LowDensityZone

#TransitRich

#Coastal/DeltaCity

- **Promote compact, mixed-use development** within existing urban boundaries.
- **Establish urban growth boundaries** or phased expansion zones.
- **Align zoning regulations** with existing or planned public transport corridors.
- **Reclaim and redevelop underutilized land** within the urban footprint.
- **Coordinate infrastructure investment plans** with spatial development priorities.

- **Advance Transit-Oriented Development (TOD) planning** through formal procurement processes [47] as demonstrated by Pune’s issuance of an RFP for TOD planning following national dialogue engagement.
- **Expand sustainable transport options** in high-tourism areas.
- **Designate low-waste or waste-free tourist zones.**
- **Promote green hospitality standards** for hotels and restaurants.
- **Integrate tourism strategies** into mobility, water, and waste planning.

Recommendations for strategic entry or levelling up are presented under the **Urban Design and Planning** theme in [Annex 4](#).

2. Modernize and Expand Sustainable Urban Mobility Systems

#TransitRich

#HighDensityZone

#RapidUrbanization

#TechReady

- **Expand and modernize bus rapid transit (BRT)** and high-capacity public transport systems.
- **Develop safe cycling networks** and pedestrian infrastructure.
- **Integrate bike-share and micro-mobility services** with transit hubs.
- **Implement congestion pricing and parking reform** where feasible.
- **Establish urban consolidation centers** to improve freight logistics.

3. Upgrade and Integrate Water, Sanitation, and Waste Systems

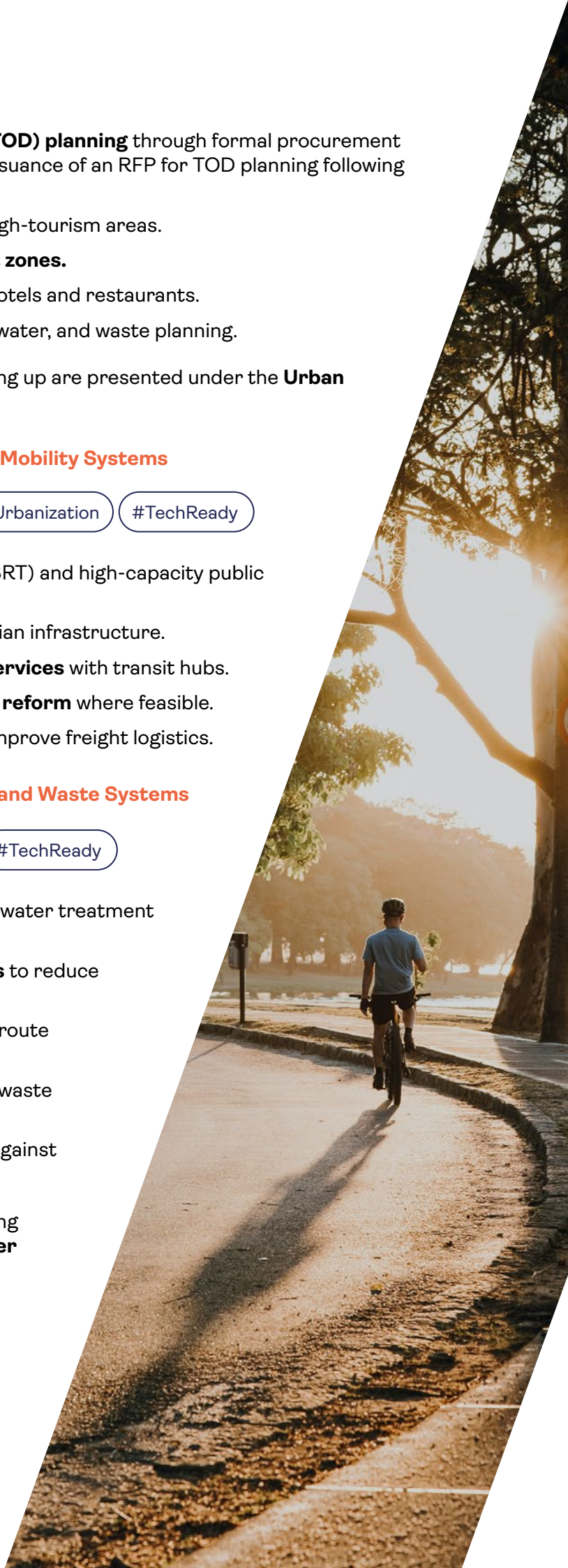
#InfrastructureBacklog

#UnderServed

#TechReady

- **Expand sewer networks** and improve wastewater treatment capacity.
- **Separate stormwater and sewage systems** to reduce contamination risks.
- **Modernize waste collection systems** using route optimization and smart tracking.
- **Scale recycling infrastructure** and organic waste diversion programs.
- **Improve landfill management** and enforce against illegal dumping.

Recommendations for strategic entry or levelling up are presented under the **Waste/Wastewater Management** theme in [Annex 4](#).



4. Institutionalize Demand–Capacity-Based Infrastructure Planning and Life Cycle Asset Management [48]

#InfrastructureBacklog

#TechReady

#RapidUrbanization

- **Conduct demand–capacity assessments** before expanding infrastructure networks, ensuring that projected population, employment, and housing growth align with ecological, fiscal, and service capacity constraints.
- **Integrate asset planning** across the full infrastructure life cycle including new investment, rehabilitation, backlog reduction, maintenance, replacement, and decommissioning rather than focusing primarily on expansion.
- **Establish comprehensive Maintenance, Rehabilitation, and Replacement (MRR) systems** to reduce system downtime, extend service life, and prevent premature asset failure.
- **Link infrastructure asset registries and maintenance databases with Geographic Information Systems (GIS)** to spatially track physical condition, operating performance, and risk exposure.
- **Apply life cycle cost accounting** that includes construction, operations, maintenance, rehabilitation, environmental impacts, and eventual decommissioning costs to guide investment decisions.
- **Prioritize durable and adaptable infrastructure designs** that reduce long-term replacement costs and service disruption.
- **Incorporate demand management strategies** (e.g., pricing reform, efficiency measures, load balancing) before committing to costly capacity expansion.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Environmental NGOs supporting eco-tourism initiatives. – Community groups participating in tourism planning consultations – Private developers adhering to density and mixed-use regulations. – Transport operators maintaining and upgrading fleet systems. – Private mobility providers integrating services through digital platforms. – Logistics companies participating in consolidated delivery schemes. – Technology firms providing real-time route optimization tools. – Neighboring municipalities forming joint waste/watershed initiatives where systems cross boundaries. – Waste management companies operating recycling and composting facilities. – Producer responsibility organizations financing end-of-life product management.
Boundary Organizations	– Environmental agencies enforcing pollution control regulations. – Engineering firms conducting condition assessments and lifecycle performance modeling. – Academic institutions supporting life cycle assessment methodologies. – Tourism boards promoting low-impact travel behavior.
National Government	– National governments co-financing large-scale transport infrastructure. – National regulators aligning service-level standards with long-term sustainability criteria.
Development Agencies & Financial Institutions	– Financial institutions financing transit-oriented and infill developments. – Development banks financing water and waste infrastructure upgrades, and incorporating life cycle cost requirements into financing criteria. – Infrastructure agencies sequencing capital investments with growth strategies. – Transit authorities coordinating service expansion with land-use plans. – Regional authorities supporting metropolitan-scale spatial coordination. – Public utilities implementing service-level performance standards. – Hospitality businesses adopting energy- and water-efficient practices.



CHALLENGE 4: CARBON-INTENSIVE ENERGY AND ECONOMIC SYSTEMS

Urban energy consumption, transport systems, building stock, industrial activity, and peri-urban agriculture collectively contribute to greenhouse gas (GHG) emissions. Many cities continue to rely on fossil fuel-based energy systems, inefficient buildings, high-emission transport fleets, and resource-intensive production patterns.

Legacy infrastructure, regulatory constraints, limited grid capacity, and financing gaps can slow the transition to renewable energy and low-carbon systems. In addition, industrial and agricultural emissions in urban and peri-urban areas may not always be fully integrated into city-level mitigation strategies.

Reducing emissions while maintaining economic competitiveness and social inclusion requires coordinated action across energy systems, land use, mobility, industry, waste, and agriculture. Diversifying energy sources and reducing material consumption will help to reduce carbon emissions and improve resilience. Accelerating energy efficiency requires more than technical retrofits on buildings and public infrastructure; it requires structured, data-driven prioritization of where interventions will deliver the greatest economic, environmental, and social returns.

KEY RECOMMENDATION:

Establish Integrated Low-Carbon and Resource-Efficient Development Strategy



LOCAL GOVERNMENTS CAN:

1. Accelerate Energy Efficiency in Buildings and Public Infrastructure

#PostIndustrial

#HighDensityZone

#LandScarce

#TechReady

- **Launch citywide energy retrofit programs** for public and residential buildings.
- **Develop GIS-based urban energy maps** that integrate building age, typology, heating sources, ownership patterns, renewable potential, and retrofit costs to identify priority zones for intervention [49].
- **Update building codes** to mandate higher energy efficiency standards.
- **Promote passive solar and bioclimatic urban design principles.**
- **Conduct energy audits** in public facilities and prioritize retrofits.

- **Apply multi-criteria decision analysis (MCDA)** to prioritize public and district-level retrofits, weighing economic feasibility, environmental impact, institutional capacity, and social considerations to identify optimal investment scenarios [49].
- **Model alternative energy transition scenarios** (e.g., municipality-led retrofits, utility-led upgrades, renewable-focused pathways) to compare cost, savings potential, and implementation feasibility before committing capital investments [49].
- **Provide incentives** for energy-efficient heating systems and smart controls.

2. Expand Renewable and Low-Carbon Energy Systems

#DrylandCity

#Coastal/DeltaCity

#NewTown

#TechReady

- **Expand renewable and low-carbon energy systems** as part of a diversified generation portfolio that balances environmental performance, affordability, and system reliability [50].
- **Develop diversified urban energy portfolios** that combine renewable generation, distributed energy systems, flexible backup capacity, and demand-side management to ensure reliability during the transition [50].
- **Adopt integrated resource planning approaches** that evaluate renewable generation, energy efficiency, distributed systems, and demand management on equal footing to minimize long-term social and fiscal costs [50].
- **Reduce exposure to fuel price volatility** and external supply shocks by diversifying energy sources and increasing local renewable generation capacity [50].
- **Plan for hybrid energy systems** during the transition, combining renewable energy with flexible low-carbon or transitional backup capacity to maintain system stability [50].
- **Promote rooftop solar** through incentives and net metering policies.
- **Explore district heating systems** using renewable or industrial waste heat.
- **Convert municipal waste into biogas** where environmentally appropriate.
- **Support solar cooperatives** and community energy models.
- **Facilitate pilot projects for innovative fuels** (e.g., hydrogen for buses or industry).

3. Promote Circular Economy and Resource Efficiency

#PostIndustrial

#HighDensityZone

#TechReady

- **Embed circular economy principles within strategic urban planning processes**, ensuring that land use planning, precinct design, infrastructure investment, and procurement policies collectively support closed-loop systems [51].
- **Implement extended producer responsibility (EPR) schemes.**



- **Establish deposit-return systems** for beverage containers.
- **Encourage land value capture tools** that finance compact development.
- **Support green public procurement policies** favoring low-carbon materials.
- **Use city-to-city exchange** to replicate tested circular economy practices (e.g. organics diversion, methane capture/utilization, composting, innovative treatment approaches) [42].
- **Use urban metabolism analysis** to map material, water, and energy flows across the city to identify opportunities for reuse, recovery, and industrial symbiosis [51].
- **Integrate circular economy principles at the precinct and district planning stage**, enabling co-location of compatible industries, shared resource hubs, and material recovery infrastructure [51].
- **Design neighbourhoods with accessible recycling stations, repair hubs, and shared-use facilities** to normalize circular practices in everyday urban life [51].

4. Integrate Peri-Urban Agriculture and Land Use into Emissions Strategies

#RapidUrbanization

#LowDensityZone

#DrylandCity

#LandScarce

- **Promote conservation agriculture and agroecology in peri-urban zones.**
- **Encourage agroforestry and reforestation on farmland.**
- **Protect and integrate peri-urban agriculture as a multifunctional land-use strategy** that strengthens food security, climate resilience, biodiversity, social cohesion, and local economic development [52].
- **Recognize peri-urban agriculture as critical resilience infrastructure** capable of maintaining food supply during economic, climate, or geopolitical disruptions [52].
- **Establish formal land-use protections** (e.g., agricultural zoning, green belts, long-term land tenure arrangements) to safeguard peri-urban agricultural land from speculative urban expansion [52].
- **Promote agroecological practices in peri-urban agriculture**, including crop diversification, soil regeneration, organic inputs, nutrient recycling, and reduced fossil fuel dependence [52].
- **Integrate peri-urban agriculture into circular urban metabolism strategies**, including composting organic waste, reclaiming water for irrigation, and restoring degraded soils [52].
- **Support cooperative models, farmer networks, and participatory governance mechanisms** to ensure peri-urban agriculture contributes to inclusive economic development [52].
- **Conduct soil assessments and implement remediation** where necessary (for e.g., phyto-remediation or soilless cultivation techniques) [52].
- **Promote rainwater harvesting, greywater reuse, and efficient irrigation technologies** to reduce resource pressure [52].
- **Integrate peri-urban agriculture into climate adaptation strategies**, recognizing its role in flood prevention, heat mitigation, biodiversity enhancement, and ecological corridor creation [52].

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Civil society organizations promoting sustainable consumption practices. – Private developers and building owners implementing retrofit measures. – Agricultural extension services providing farmer training. – Cooperatives supporting sustainable supply chains. – Waste cooperatives and recycling enterprises managing diversion programs. – Retailers participating in deposit-return schemes. – Construction firms adopting low-carbon building materials. – Industrial partners supplying waste heat for district systems. – Utilities offering demand-side management programs. – Energy utilities upgrading grid capacity and integrating renewables.
Boundary Organizations	– Professional associations training architects and engineers in energy-efficient design. – Research institutions supporting pilot innovation projects and developing low-emission farming techniques.
National Government	– National regulators aligning energy performance standards. – National governments clarifying renewable energy tariffs and regulations. – National ministries aligning agricultural subsidies with climate goals.
Development Agencies & Financial Institutions	– Financial institutions providing green loans for retrofits or agriculture. – Private investors financing renewable infrastructure. – Producers financing packaging recovery systems.



CROSS-CUTTING ENABLER 1: GOVERNANCE AND STRATEGIC PLANNING

Delivering integrated, resilient, and inclusive urban development requires clear mandates, coordinated planning systems, and alignment across levels of government. Fragmented institutional structures, overlapping responsibilities, and limited policy coherence can delay implementation and reduce the impact of public investment.

Strategic planning provides the framework for aligning land use, mobility, housing, infrastructure, climate, and economic development priorities. Effective governance ensures that these strategies are implemented coherently, transparently, and in coordination with national and regional frameworks.

Strengthening governance and strategic planning enables cities to translate long-term vision into coordinated action, and can help cities to take effective decisions for resource allocation and measurable outcomes. Achieving sustainable urban development requires integration not only across sectors, but across the full planning–development–implementation cycle, operating within ecological limits and supported by continuous sustainability assessment [53]. Without structured coordination mechanisms, policy misalignment, financing bottlenecks, and duplication can slow implementation [54].

KEY RECOMMENDATION:

Strengthen the Governance Framework for Integrated Urban Planning, Multilevel Coordination, and Fiscal Accountability



LOCAL GOVERNMENTS CAN:

1. Institutionalize Integrated and Long-Term Urban Planning

Integrated planning aligns sectoral strategies with fiscal realities and climate objectives.

#RapidUrbanization

#NewTown

#TechReady

- **Update master plans** to align land use, mobility, housing, climate resilience, infrastructure, and economic development strategies.
- Ensure that **sustainability assessment** is embedded at multiple stages of the planning and development cycle, including pre-implementation and post-implementation review phases.

Institutionalize iterative feedback loops that allow plans and projects to be re-evaluated and adjusted if sustainability objectives are not met [53].

- **Institutionalize integrated, system-based planning and development** aligned with ecosystem limits and sustainability evaluation [53].
- **Establish cross-departmental planning committees** with shared performance targets.
- **Align municipal plans with national development strategies**, climate commitments, and relevant global frameworks.
- **Pilot innovative planning approaches** (e.g., climate resilience zones or integrated mobility corridors) before scaling citywide.
- **Planning frameworks** that recognize ecological carrying capacity and operate within ecosystem boundaries to avoid irreversible environmental degradation [53].
- **Use targeted planning labs** or academies to test integrated design solutions (e.g., integrating nature-based solutions, active mobility, and social inclusion into corridor or boulevard redesign). Cities such as Cartago and Heredia incorporated NbS, active mobility, and inclusion elements into boulevard and downtown planning following UrbanShift lab participation.
- **Apply geospatial risk analysis** to guide development in high-risk zones before approving new expansion areas. Kigali incorporated geospatial climate risk analysis into planning for new development areas following lab participation.
- **Institutionalize adaptation tagging** or taxonomy systems within municipal budgets to better track climate-related expenditures and communicate impacts to investors. Mendoza introduced an adaptation taxonomy to improve monitoring and investment visibility.

2. Strengthen Multilevel Coordination

- **Establish formal communication channels** with national ministries responsible for infrastructure, housing, transport, and climate.
- **Participate in metropolitan governance bodies** to coordinate cross-boundary investments.
- **Develop memoranda of understanding (MoUs)** with neighboring jurisdictions for shared infrastructure planning.
- **Align capital investment plans** with regional infrastructure strategies.
- **Nominate dedicated focal points** for national coordination [54].
- **Proactively engage in structured national-local dialogues** on climate, infrastructure, and urban development [54].
- **Align municipal plans with national development strategies** and NDC commitments [54].



- **Prepare investment-ready project pipelines** that respond to national financing instruments [54].
- **Contribute local data** and implementation feedback to national monitoring systems [54].

3. Align Planning, Budgeting, and Performance Monitoring

#TechReady

- **Develop multi-year capital investment plans** aligned with strategic priorities.
- **Integrate performance indicators** into budgeting and procurement processes.
- **Establish centralized monitoring dashboards** tracking cross-sector progress.
- **Conduct periodic policy reviews** informed by implementation data.
- **Launch and regularly update Local Climate Action Plans** supported by structured capacity-building platforms, as demonstrated by Chennai, Freetown, and Teresina.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Civil society organizations participating in structured planning consultations, and reviewing publicly disclosed progress reports.
Boundary Organizations	– Universities and technical institutes supporting spatial modeling and scenario analysis, and conducting independent policy evaluations. – Professional planning associations providing updated standards and technical guidance.
National Government	– National ministries aligning regulatory frameworks and fiscal policies with municipal planning authority.
Development Agencies & Financial Institutions	– Development partners supporting governance reform, institutional strengthening, and results-based financing mechanisms. – Audit institutions reviewing fiscal and performance accountability. – Regional authorities coordinating metropolitan-scale development and infrastructure sequencing.



CROSS-CUTTING ENABLER 2: GEOSPATIAL DATA AND DIGITALIZATION

Effective urban transformation depends on timely, reliable, and interoperable data systems. As cities confront rapid urbanization, climate risk, infrastructure strain, and social inequality, fragmented or inconsistent data can limit evidence-based decision-making and weaken accountability.

Geospatial tools, digital platforms, and real-time monitoring systems can strengthen planning, improve service delivery, and enhance transparency. However, digital transformation requires system-wide structural and cultural change [55].

To improve cross-sector coordination and strategic prioritization, it requires a unified data architecture, meanwhile ensuring consistency to improve comparability and transparency for policy evaluation. Embedding data and evidence can help to review policy implementation, and to prioritize decision making for policy investment. In addition, the process of digital transformation should enhance equity, efficiency, and resilience while safeguarding rights.

KEY RECOMMENDATION:

Strengthen Integrated and Data-Driven Urban Governance



LOCAL GOVERNMENTS CAN:

1. Establish Integrated Geospatial and Urban Data Platforms

#TechReady

#InformalSettlements

#RapidUrbanization

- **Establish centralized urban data platforms** that integrate land use, infrastructure, mobility, climate, housing, and financial data.
- **Use Geographic Information Systems (GIS)** as a core spatial layer across departments.
- **Develop interoperable systems** that allow departments to exchange and analyze shared datasets.
- **Define clear data ownership, access protocols, and institutional accountability structures.**
- **Integrate informal settlement and underserved area mapping into official datasets.**

2. Standardize Data Collection, Quality Assurance, and Reporting

#TechReady

- **Adopt standardized data collection protocols** across departments.
- **Align indicators with national frameworks** and relevant global reporting platforms.
- **Establish internal quality assurance** and validation procedures.
- **Create reporting cycles** that align with strategic planning and budgeting processes.
- **Publish periodic performance reports** accessible to the public.

3. Embed Data into Decision-Making and Investment Prioritization

#TechReady

- **Integrate performance dashboards into executive and departmental decision-making processes.**
- **Link capital investment plans to measurable service and sustainability indicators.**
- **Use geospatial analysis** to identify underserved areas and prioritize equitable investments.
- **Conduct impact evaluations** of major infrastructure and climate initiatives.
- **Apply predictive analytics** to inform infrastructure maintenance and risk planning.

4. Promote Responsible and Inclusive Digital Innovation

#TechReady

#UnderServed

- **Deploy IoT systems** for monitoring traffic flows, air quality, water systems, and infrastructure performance.
- **Develop public-facing digital dashboards** to improve transparency and civic engagement.
- **Pilot smart mobility and infrastructure management platforms** before scaling.
- **Adopt data privacy, cybersecurity, and ethical technology standards.**
- **Expand digital literacy initiatives** within municipal departments and communities.
- **Adopt a strategic digital transformation approach** that moves beyond simple digitization of services **toward systemic digital integration** across governance, infrastructure, and service delivery [55].
- **Local governments should follow a structured digitalization pathway**, beginning with an assessment of existing digital capacities and gaps, followed by stakeholder engagement, strategic alignment with national frameworks, pilot testing, and continuous monitoring and feedback mechanisms [55].
- **Establish cross-departmental Digital Transformation Task Forces** to ensure continuity across political cycles and embed digital innovation within municipal operations [55].

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Civil society organizations contributing community-generated and participatory mapping data; reviewing and validating public reporting outputs; and advocating for digital inclusion and privacy protections. – Technology providers designing interoperable and secure digital infrastructure. – Technology firms providing sensor infrastructure and digital solutions. – Telecommunications providers expanding broadband connectivity.
Boundary Organizations	– Digitalization efforts should be embedded within a multilevel governance framework that aligns municipal strategies with national policies, leverages intergovernmental cooperation, and mobilizes partnerships with academia, civil society, and the private sector [55]. – Universities and research institutions supporting spatial modeling, data integration, indicator development and independent evaluation, and validating predictive models and technology performance. – International reporting platforms providing benchmarking methodologies. – Professional associations building analytical capacity among municipal staff.
National Government	– National statistical agencies aligning reporting standards and indicators. – National governments harmonizing indicator definitions and reporting requirements. – National regulators establishing digital governance frameworks.
Development Agencies & Financial Institutions	– Development partners supporting results-based financing frameworks. – Audit institutions reviewing performance-linked expenditures. – Regional authorities coordinating metropolitan-scale geospatial datasets.



CROSS-CUTTING ENABLER 3: PEOPLE-CENTERED AND INCLUSIVE GOVERNANCE

Inclusive governance strengthens the legitimacy, effectiveness, and sustainability of urban transformation. Policies and investments are more likely to succeed when they reflect the lived realities of residents, particularly those in informal settlements, underserved neighborhoods, and marginalized communities.

However, participation mechanisms are often ad hoc, consultation processes may not systematically influence decision-making, and vulnerable groups may face barriers to engagement due to language, digital access, mobility, or social constraints.

A people-centered governance approach institutionalizes participation, embeds social inclusion and equity across policy cycles and in formal decision-making processes [56] [57], and ensures that urban development processes are transparent, accountable, and responsive.

KEY RECOMMENDATION:

Strengthen Inclusive, Participatory, and Accountable Urban Governance



LOCAL GOVERNMENTS CAN:

1. Institutionalize Structured and Continuous Participation

#InformalSettlements

#UnderServed

- **Establish formal requirements for participatory processes** in major urban development projects.
- **Create multi-stakeholder planning committees** that include civil society, community representatives, and the private sector.
- **Allocate dedicated budgets and staff for community engagement.**
- **Integrate participatory inputs into planning, budgeting, and monitoring cycles.**
- **Develop structured grievance redress and feedback mechanisms.**

2. Mainstream Gender and Social Inclusion Across Urban Policies

#InformalSettlements

#UnderServed

- **Integrate gender-disaggregated and socially disaggregated data** into policy analysis.
- **Apply gender-responsive and equity-sensitive budgeting practices.**
- **Conduct safety audits** for public spaces and transport systems.
- **Embed social inclusion criteria in procurement** and project evaluation frameworks.
- **Ensure that informal workers and vulnerable groups are represented** in consultation processes.

3. Promote Transparency, Accountability, and Civic Trust

#TechReady

- **Publish accessible summaries of plans, budgets, and implementation progress.**
- **Maintain open data portals** and performance dashboards.
- **Establish independent oversight or advisory mechanisms** where appropriate.
- **Regularly communicate implementation updates** to residents.
- **Encourage participatory monitoring** of major projects.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).



THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Community-based organizations facilitating resident engagement and dialogue. – Private sector actors incorporating stakeholder engagement into project design. – Civil society groups conducting social audits, policy reviews and independent monitoring; and advocating for marginalized groups. – Private employers promoting inclusive hiring and workplace policies. – Transport operators and service providers incorporating safety and accessibility standards.
Boundary Organizations	– Academic institutions evaluating participatory outcomes and inclusion effectively, and conducting equity assessments and impact studies. – Media platforms disseminating information about planning processes, and facilitating public debate.
National Government	– National institutions aligning social protection frameworks with local inclusion strategies.
Development Agencies & Financial Institutions	– Audit bodies ensuring compliance with financial and procedural standards.



CROSS-CUTTING ENABLER 4: INNOVATIVE FINANCE

Delivering inclusive, climate-resilient, and low-carbon urban development requires substantial and sustained investment. However, many cities face constrained fiscal space, limited own-source revenue, restricted borrowing authority, and complex access requirements for climate and development finance.

Traditional funding models may not be sufficient to finance large-scale infrastructure modernization, climate adaptation, affordable housing, or digital transformation. At the same time, private capital and blended finance opportunities remain underutilized in many urban contexts [58].

Innovative finance strengthens cities' ability to mobilize diverse funding sources, structure bankable projects, and ensure that financial strategies align with long-term development priorities.

To advance innovative finance mechanisms, sound financial governance underpins investment readiness, which requires strengthening preparation to secure funding for project and policy implementation. This shortage can be enhanced through expanding financing opportunities and knowledge exchange and feasible tools, to increase flexibility and investment scale. Aggregating small, fragmented, or sector-specific sustainable urban development projects into structured portfolios can enhance scale, diversify risk, lower transaction costs, and better align financing with integrated urban strategies [61].

KEY RECOMMENDATION:

Advance Innovative and Strategic Urban Finance Mechanisms



LOCAL GOVERNMENTS CAN:

1. Strengthen Municipal Financial Management and Revenue Systems

- **Develop multi-year capital investment plans** aligned with strategic priorities.
- **Strengthen own-source revenue systems** while safeguarding affordability for low-income households.
- **Improve property valuation and land administration systems** to enhance revenue collection.
- **Integrate lifecycle costing** into infrastructure budgeting.
- **Enhance financial transparency** through public reporting and audits.

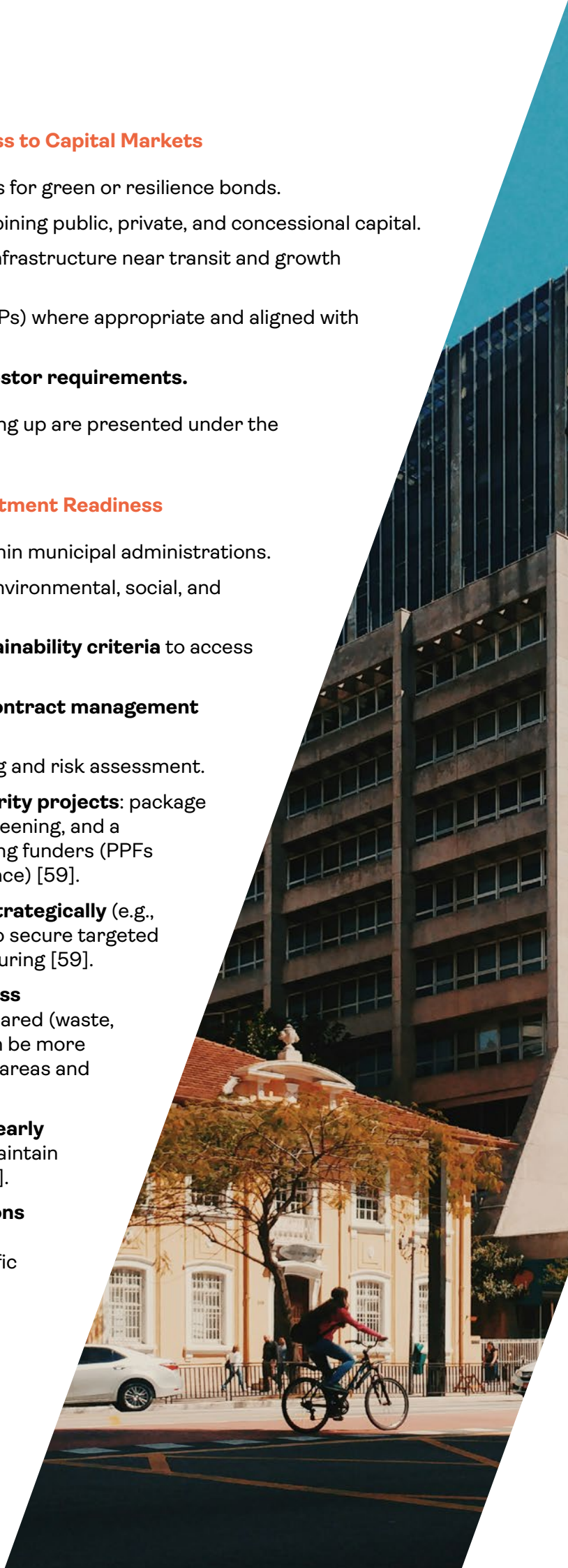
2. Diversify Financing Instruments and Access to Capital Markets

- **Build internal capacity** to structure projects for green or resilience bonds.
- **Explore blended finance mechanisms** combining public, private, and concessional capital.
- **Utilize land value capture tools** to finance infrastructure near transit and growth corridors.
- **Structure public-private partnerships (PPPs)** where appropriate and aligned with public interest.
- **Develop project pipelines aligned with investor requirements.**

Recommendations for strategic entry or levelling up are presented under the **Innovative Finance** theme in **Annex 3**.

3. Strengthen Project Preparation and Investment Readiness

- **Establish project preparation facilities** within municipal administrations.
- **Conduct feasibility studies** incorporating environmental, social, and financial analysis.
- **Align project design with climate and sustainability criteria** to access green finance.
- **Develop standardized procurement and contract management processes.**
- **Build internal expertise** in financial modeling and risk assessment.
- **Create a “finance-ready” pathway for priority projects:** package technical and financial pre-feasibility, risk screening, and a clear investment narrative before approaching funders (PPFs emphasize this as decisive for unlocking finance) [59].
- **Use project preparation facilities (PPFs) strategically** (e.g., ICLEI TAP, City Climate Finance Gap Fund) to secure targeted technical assistance for feasibility and structuring [59].
- **Pursue joint/aggregated applications across municipalities** where service systems are shared (waste, watershed, transport): Joint applications can be more attractive to PPFs because they cover wider areas and populations [59].
- **Secure formal council/authority approval early** to demonstrate political buy-in in order to maintain momentum and meet PPF requirements [59].
- **Be explicit in proposals and early discussions** with project preparation facilities, financiers, and approving authorities about (i) the specific technical assistance needed and (ii) which financing instruments are legally and fiscally feasible for the city [59].



4. Leverage Partnerships and International Platforms

- **Engage in regional and global urban finance platforms** to access technical assistance.
- **Share financing models and lessons learned with peer cities.**
- **Participate in climate finance reporting mechanisms** to strengthen credibility.
- **Develop partnerships with local private sector actors and financial institutions.**
- **Explore cooperative financing models** for community-level initiatives.
- **Select a fit-for-purpose collaboration model** (non-commercial convening, enabling innovation, market-shaping regulation, PPPs, business-focused international partnerships) depending on sector and context [60].
- **Prioritize partnerships early in project design** (before procurement), and use contract timeframes aligned with investment needs to signal stability and reduce risk for partners [60].
- **Do early legal/regulatory screening** to identify enablers and blockers for partnerships and project delivery [60].

5. Promote Aggregated and Portfolio-Based Financing Approaches

#InfrastructureBacklog

- **Bundle smaller projects** (e.g., building retrofits, distributed renewable installations, drainage upgrades, mobility improvements) **into aggregated investment portfolios** to improve bankability and investor attractiveness.
- **Structure corridor- or district-level investment packages** that combine mobility, housing, climate adaptation, and public space improvements under a single financing framework.
- **Coordinate with neighboring municipalities** to develop joint or regional investment portfolios where infrastructure systems are shared (e.g., waste management, watershed protection, transport networks).
- **Develop standardized documentation and financial models** to streamline due diligence across bundled projects.
- **Explore revolving or catalytic financing mechanisms** that reinvest savings from energy efficiency or service optimization into new sustainable investments.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).

THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Civil society organizations supporting transparency and accountability in financed projects. – Technical partners assisting with risk assessment, financial structuring, and performance aggregation methodologies – Private sector partners participating in PPP arrangements. – Commercial lenders and institutional investors providing portfolio-based investment products suited to diversified municipal assets.
Boundary Organizations	– Professional associations training municipal finance staff. – Academic institutions supporting cost-benefit analysis and evaluation. – City networks and PPFs providing structured support for feasibility, project definition, and investment matchmaking. – City networks and PPFs provide structured support for feasibility, project definition, and investment matchmaking to help cities overcome technical barriers to unlock funding [59]. – International networks facilitating peer exchange on financial innovation.
National Government	– National governments clarifying fiscal transfer mechanisms and borrowing frameworks and enabling pooled financing mechanisms or inter-municipal borrowing frameworks. – National treasuries clarifying bond issuance and debt frameworks.
Development Agencies & Financial Institutions	– Audit institutions strengthening financial accountability. – Development partners providing technical assistance in fiscal reform. – Commercial banks and development banks providing loans and guarantees. – Impact investors and pension funds investing in sustainable infrastructure. – International climate funds offering concessional finance. – Private investors identifying bankable urban projects. – Development bank and climate funds providing technical assistance and advisory services and supporting aggregated or programmatic financing structures. – International platforms supporting investment matchmaking. – Engineering and financial advisory firms assisting in project structuring. – Multilateral institutions offering capacity-building and financing tools.



CROSS-CUTTING ENABLER 5: INSTITUTIONAL CAPACITY AND PARTNERSHIP DEVELOPMENT

Even with strong governance frameworks, data systems, financing tools, and participatory processes, implementation ultimately depends on institutional capacity. Research on local sustainable development highlights that strategic, analytical, managerial, and collaborative capacities act as institutional preconditions for effective policy design, implementation and evaluation [62]. Without these capacities, cities may struggle to translate ambition into sustained results.

Capacity gaps are often systemic rather than situational, shaped by regulatory complexity, evolving technical demands, and limited access to specialized training. Strengthening institutional and human capacity enables cities to convert strategies and investments into measurable outcomes.

Institutional effectiveness depends on skilled personnel and clear operational systems, which requires the integration of strategic direction, analytical capability, organizational management systems, and collaborative engagement, rather than isolated training initiatives [62]. Implementation capacity determines whether planned projects are delivered effectively. Effective implementation requires organizational management capacity i.e. the ability to align structures, procedures, budgets, and accountability systems with sustainability objectives [62]. Peer learning and the development of collaborative capacity can enhance legitimacy and implementation effectiveness [62].

KEY RECOMMENDATION:

Strengthen Institutional Capacity Through Partnerships and Knowledge Exchange



LOCAL GOVERNMENTS CAN:

1. Strengthen Internal Technical and Administrative Capacity

- **Conduct institutional capacity assessments** to identify priority gaps.
- **Establish cross-sector working groups** to improve coordination across departments.
- **Invest in continuous professional development for staff** in planning, finance, climate adaptation, digital governance, and procurement.

- **Develop standardized operating procedures** for project implementation and monitoring.
- **Create knowledge management systems** to document lessons learned and good practices.

2. Strengthen Project Implementation and Procurement Systems

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- **Modernize procurement systems** to improve transparency and efficiency.
- **Develop standardized contract management frameworks.**
- **Strengthen internal monitoring systems** for project execution.
- **Build expertise in environmental and social safeguards.**
- **Conduct post-implementation reviews** to identify improvement areas.

3. Foster City-to-City Learning and Knowledge Exchange

- **Participate in structured city networks** and knowledge-sharing platforms.
- **Document and disseminate successful policy approaches** and pilot projects.
- **Host peer learning exchanges** and study visits.
- **Benchmark performance** against comparable cities.
- **Adapt tested solutions** to local contexts.
- **Institutionalize peer-learning loops** tied to implementation (e.g., require learning briefs after exchanges and integrate lessons into project design templates). This sort of peer learning can directly inform pilots [42].
- **Use structured academies and forums as triggers for formal policy adoption**, such as launching climate action plans following capacity-building engagements as undertaken in Teresina, Chennai, and Freetown.

4. Build Partnerships Across Sectors and Communities

- **Establish formal partnership frameworks** with private sector actors, academia, and civil society.
- **Support community-led initiatives** that complement municipal programs.
- **Engage universities in pilot projects** and applied research.
- **Develop public-private collaboration models** aligned with public interest.
- **Facilitate dialogue platforms** across sectors.

For enabling and long-term sustainability conditions addressing this challenge, please refer to [Annex 3](#).



THE BROADER CITY ECOSYSTEM CONTRIBUTES THROUGH:

	Supporting Actions and Measures
Market & Civic Implementers	– Civil society organizations monitoring project transparency – Private sector partners adhering to transparent contracting standards.
Boundary Organizations	– Training institutions offering specialized courses and certifications – Professional associations providing technical standards and continuing education. – Universities and academic institutions supporting applied research and policy experimentation and synthesizing comparative case studies. – UrbanShift-style global platforms and city academies providing structured training and dissemination channels that accelerate uptake of proven practices [42]. – International city networks facilitating structured exchanges. – Regional platforms coordinating cross-city collaboration.
Development Agencies & Financial Institutions	– Development partners funding technical assistance and advisory support, and supporting exchange programs. – Audit institutions reinforcing accountability and compliance. – Development banks providing procurement advisory support.

Discussion and Conclusion



The aggregated ISUDA results indicate that cities are increasingly adopting integrated approaches to sustainable urban development, with measurable progress between baseline (2021) and follow-up (2025). The assessment confirms that the barriers to sustainable urban transitions remain fundamentally systemic. Climate risk and ecosystem degradation, inequality and spatial exclusion, and strained urban systems are not standalone problems; they compound each other through land-use decisions, infrastructure backlogs, fiscal constraints, and uneven access to data and participation.

To address structural gaps and intertwined urban system challenges, city leaders must transition from “identifying” problems to “institutionalizing” solutions, which again highlights the unique value of the ISUDA. By synthesizing multidimensional indicators into actionable dimensions, ISUDA reduces analytical complexity while providing decision-makers with clear diagnostic and benchmarking tools. Based on these analyses, cities can identify key dimensions and strategically align potential actions to enhance sustainable urban development.

In addition to identifying key dimensions, another valuable outcome of this report is the pinpointing of challenge clusters, including those driven by existing urban systems. Because these barriers are interconnected, improvements in one dimension can generate positive effects in others. For example, enhancements in data infrastructure can accelerate climate-resilient planning, while strengthened participation mechanisms ensure that social inclusion goals are embedded in infrastructure investments. By identifying context-specific conditions and aligning them with the proposed recommendations, this work guides decision-makers from the initial identification of gaps toward actionable solutions.

The recommendations are also tailored to reflect the distinct roles of leadership and support held by city officials and other stakeholders. Specific groups can navigate the guidance through targeted recommendations, which outline diverse interventions suited to their responsibilities and capacity to support local governments in advancing urban sustainable development. Collectively, this report provides data-driven insights and fosters greater coordination among city officials both within and across local government departments. Such coordination can strengthen multilevel governance and institutional capacity, which has been highlighted as a critical cross-cutting enabler for enhancing sustainable development.

Looking ahead, the report positions cities to move from incremental improvements toward sustained, scalable impact by:

1. institutionalizing integrated planning and budgeting cycles;
2. strengthening data interoperability and decision-support systems;
3. building inclusive participation and accountability mechanisms; and
4. developing finance-ready pipelines and partnerships that can translate strategy into delivery.

In short, the aggregated evidence shows meaningful momentum, but it also makes the next step clear: turning commitment into durability, where integrated, people-centered, and climate-resilient urban development becomes standard practice embedded in institutions, financing, and day-to-day governance.



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ANNEX 1. ISUDA INDICATORS

Indicator Number	Indicator	Description / Intention of the Indicator
1	The city has a sustainable development (SD) plan with a clearly stated goal and objectives.	Presence of policy and strategic document(s) targeting sustainable development of the city. It can be a document of a regular development plan, adaptation plan or infrastructure plan where overall city sustainability is considered.
2	The city has sectoral sustainable development plans to address the overall sustainability goals and objectives.	The sustainable development policy/document of the city addresses the sustainability of different sectors (e.g. building, mobility, mitigation, adaptation, resilience, economy, biodiversity, infrastructure, water, food, green space etc.)
3	The city has an integrated working approach to address sectoral and overall sustainable development goals and objectives.	The local municipality / local government has an effective and functioning partnership with different sectors and organizations within the city to implement the SD plan.
4	The city has a climate change adaptation/climate resilience plan and policies.	The city has a planning and policy document to address climate change adaptation / climate change resilience.
5	The city has a communication mechanism with national authorities to implement a sustainable development and Climate Change Adaptation (CCA) plan.	The city has a functioning partnership and communication with provincial and national governments to implement SD and CCA plans and activities.
6	The city has a climate change mitigation plan and policy.	The city has a planning and policy document to address the climate change mitigation plan.
7	The sustainable development plan is aligned with the national sustainable development agenda National Adaptation Plan (NAP) /Nationally Determined Contribution (NDC).	SD and/or CCA plan is made in accordance with the national sustainable development agenda/NAP (National Adaptation Plan) /NDC (Nationally Determined Contribution).
Monitoring and Evaluation		
8	The city has a monitoring plan and system in place for the sustainable development plan and activities.	There is a monitoring and evaluation system to track the progress of the SD actions and learning.
9	The city has a monitoring plan and system for sectoral plans and activities.	The city has a monitoring and evaluation system for sectoral plans and activities.
10	The city has a Climate Change Adaptation (CCA) monitoring plan.	There is a monitoring and evaluation system to track the adaptation and rectify actions and policies.

Indicator Number	Indicator	Description / Intention of the Indicator
	Monitoring and Evaluation	
11	The city has a GHG emissions monitoring system.	Presence of any GHG accounting system to calculate emissions.
12	The city reports climate data on a national or international platform.	The city is registered and reporting on a national or international reporting platform.
	Finance	
13	The city exhibits financial sustainability – credit worthiness.	Evaluate city's financial performance i.e. account transparency (in the form of public financial statements), capacity of a city to meet its financial obligations, including repayment of its debts, OPEX, CAPEX; well established tax and fee collection system.
14	The city has a monitoring and evaluation system/framework to assess and document sustainable urban development finance.	Assess whether SUD related expenditures are routinely tracked and measured in the integrated Budget and Accounting System.
15	The city leverages multiple financial instruments for urban infrastructure.	Whether the city has undertaken or is planning to utilize fiscal instruments or innovative financing approaches such as long-term local currency public debt financing; Public-private partnership model, green bonds, and land value capture, etc.? Check the most used financing sources and mechanisms (now and in the last years).
16	The city has the technical capacity to access international finance for sustainable urban development.	Strategy or actions undertaken by city to access finance from international agencies (developmental banks, multi/bi-lateral institutions, private entities) to channel public and private investments towards urban infrastructure and services (e.g. urban renewal or new developments), document any ongoing or planned projects through international finance, planning process and experience. Check the conditions to access international finance.
	Strategic planning and data	
17	The city mainstreams gender in sustainable urban development policies and plans.	To evaluate whether urban development policies and plans are gender inclusive.
18	The city's sustainable urban development policies and plans address race, class and ethnicity inequalities.	To evaluate whether urban development policies and plans are equitable and inclusive.

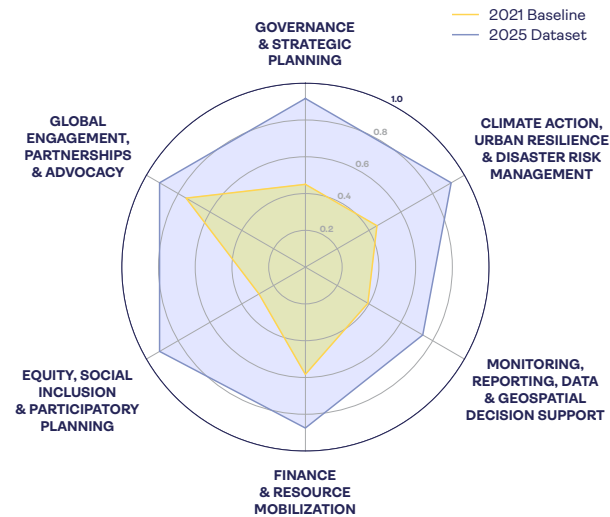
Indicator Number	Indicator	Description / Intention of the Indicator
Strategic planning and data		
19	The city incorporates participatory planning procedures.	To evaluate whether the city incorporates participatory planning procedures.
20	The city incorporates participatory planning procedures that also include vulnerable groups such as migrants, low-income groups, disabled, ethnic groups, the elderly and children.	To evaluate whether the city incorporates participatory planning procedures to include vulnerable groups.
21	The city has available data or capacity to collect data.	The city has available data or the technical and financial capacity to collect data that are relevant, such as infrastructural, economic, demographic, social indicators etc.
22	The city uses geospatial data for urban decision-making.	The capacity of the city to collect and apply geospatial data and tools.
23	The city uses strategic planning in the development and implementation of projects and initiatives.	The capacity and expertise of the city to develop and implement strategic planning principles and policies.
24	The city has technical and strategic capacity to develop and implement key sustainability projects or investments.	The city (local government / municipality) has the strategic and technical capacity to support and encourage cross-collaboration between departments and include citizen participation while implementing the stages of an urban strategic plan: Diagnosis, Planning, Strategic Management, Monitoring and Evaluation.
Urban Resilience / COVID-19 response		
25	The city has an emergency response mechanism in place.	An Emergency Response Mechanism (ERM) aims to provide a rapid response to the immediate needs of populations affected by natural or man-made disasters.
26	The city has a disaster risk reduction plan.	Disaster risk reduction (DRR) plan refers to a long-term strategy to respond to natural disasters.
27	The city has Climate Risk Assessment (CRA) policies and practices.	Climate Risk Assessment to understand climate vulnerabilities to undertake sustainability, resilience and adaptation policies and actions.
28	The city has a pandemic (e.g. COVID-19) response mechanism.	Working group / committee set up to respond to infrastructural related challenges arising from pandemics such as COVID-19.

Indicator Number	Indicator	Description / Intention of the Indicator
	Advocacy	
29	The city participates in national/regional/international events related to sustainable development.	Concrete activities such as organization of global, regional and national dialogues with local government representatives, ministers and thought leaders, to discuss and drive the implementation of policies, vertical integration frameworks and financing, conducive to creating sustainable cities.
30	The city undertakes resolutions and/or commitments to advance urban sustainability and inclusiveness in high-level policy making events.	
31	The city is a part of a broader advocacy program or group such as GCoM, C40 Cities, ICLEI etc.	
	Multi-stakeholder collaboration	
32	The city has capacity to resolve local, concrete cross-sectoral problems that require multiple stakeholder coordination (horizontal integration).	Evaluation of the current status of horizontal integration and coordination between different sectors to address specific issues or advance sustainable development. (municipal boundaries and beyond)
33	The city participates in national / state programs or schemes contributing to sustainable development (vertical integration).	Evaluation of current status of vertical integration between national / state government and city government.
34	The city has previous peer learning experiences on sustainability issues.	Current status of peer-to-peer exchange with other cities on sustainability issues.
	SDGs	
35	The city has a committee/body for implementing SDG targets.	The city has a committee/body for implementing SDG targets into the overall policies or projects.
36	The SDGs are integrated in the city's policies and projects (either fully or partially).	The strategies and targets embedded in the city's planning and project formulation meet the global SDGs targets and strategies.

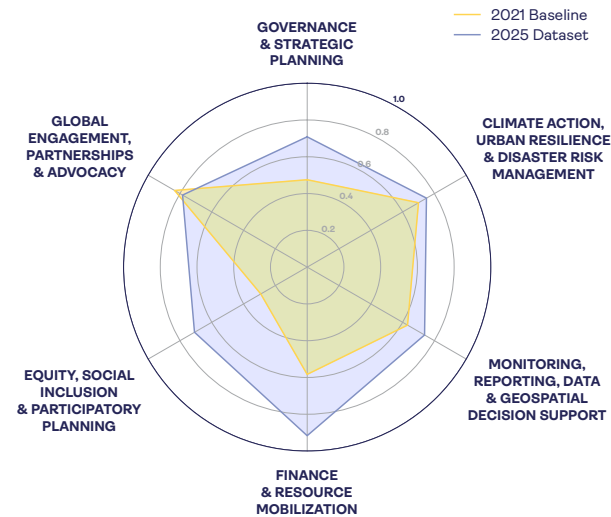
ANNEX 2. DIMENSION SCORES OF ISUDA COMPOSITE RESULTS FOR 23 CITIES

LATIN AMERICA

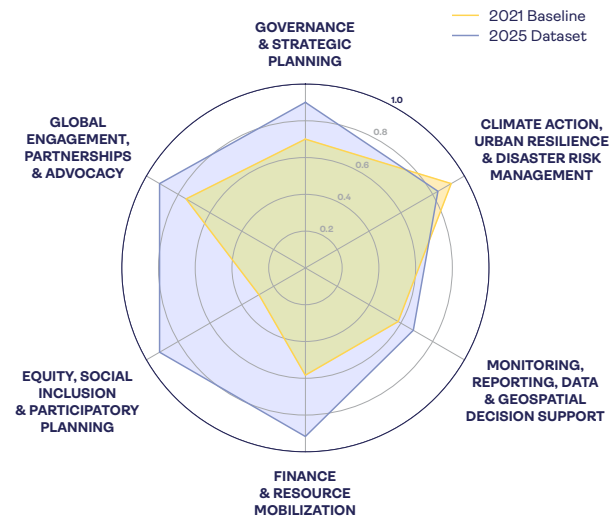
BELÉM (Brazil)



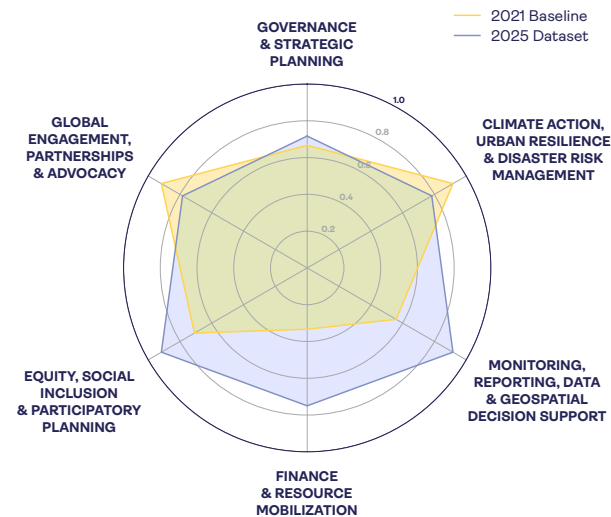
FLORIANÓPOLIS (Brazil)



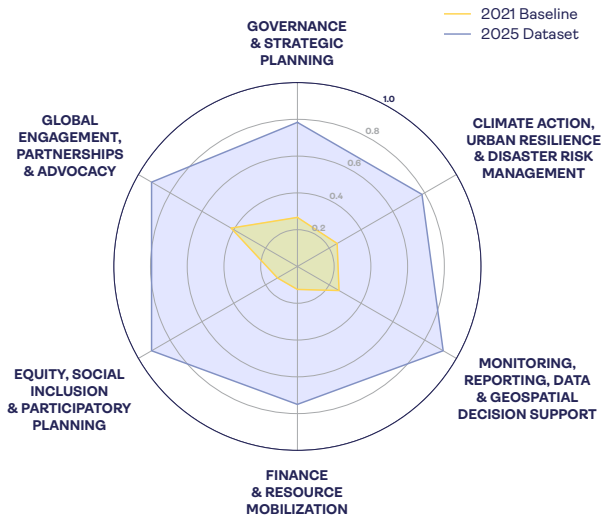
TERESINA (Brazil)



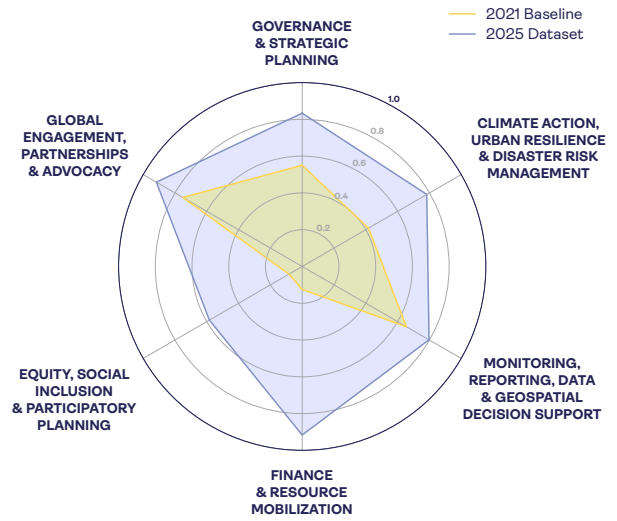
BUENOS AIRES (Argentina)



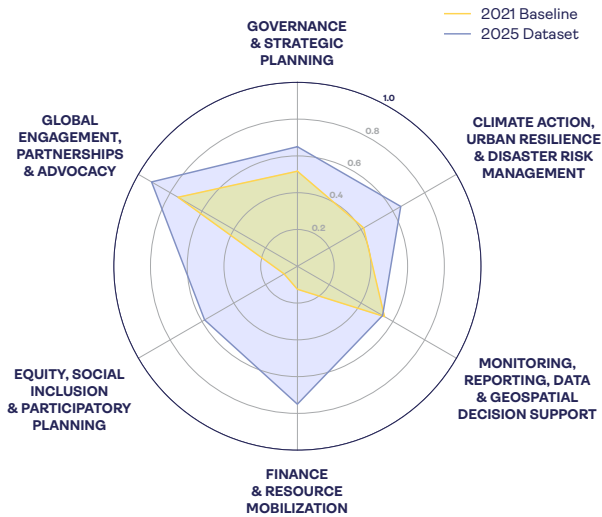
MAR DEL PLATA (Argentina)



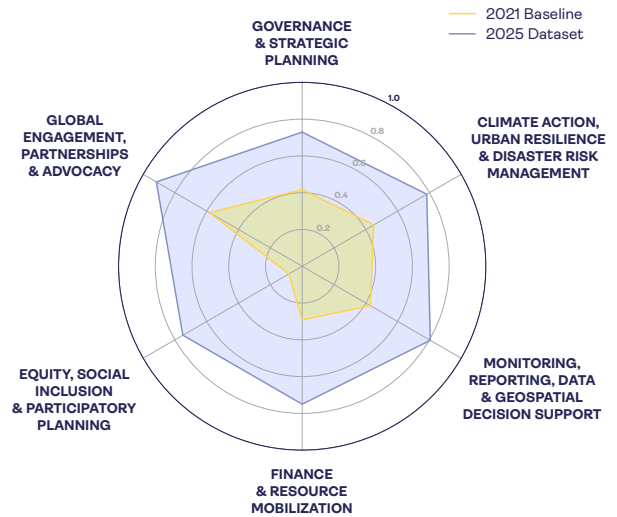
MENDOZA (Argentina)



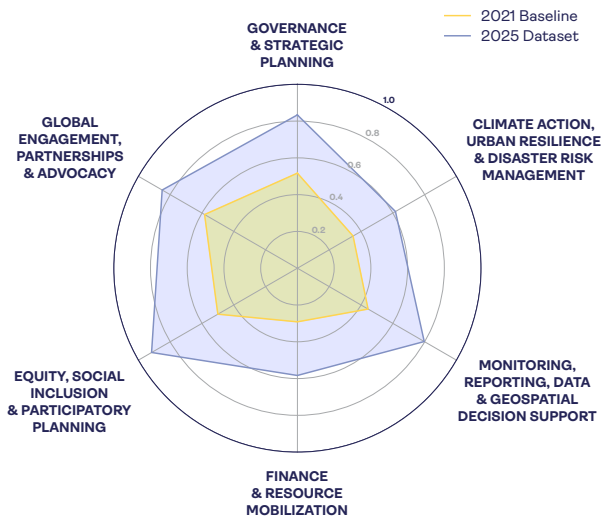
SALTA (Argentina)



USHUAIA (Argentina)

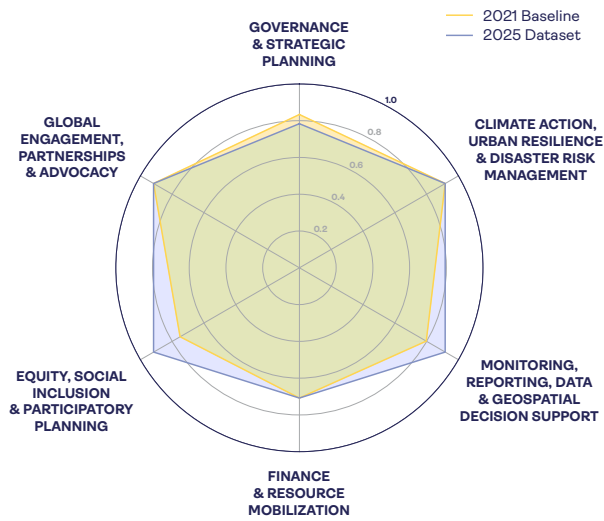


SAN JOSÉ (Costa Rica)

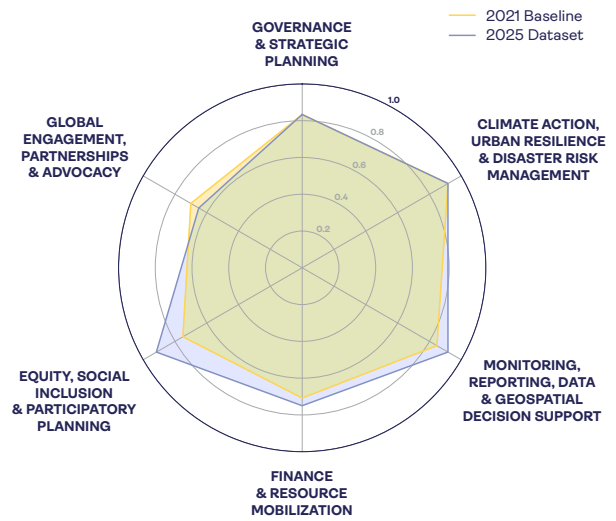


ASIA

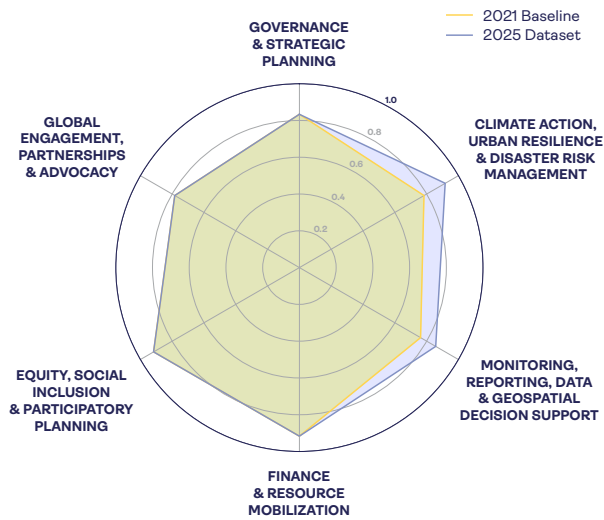
CHENGDU (China)



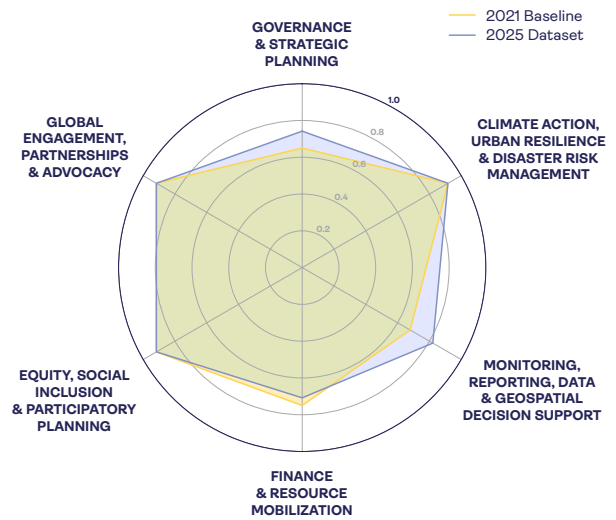
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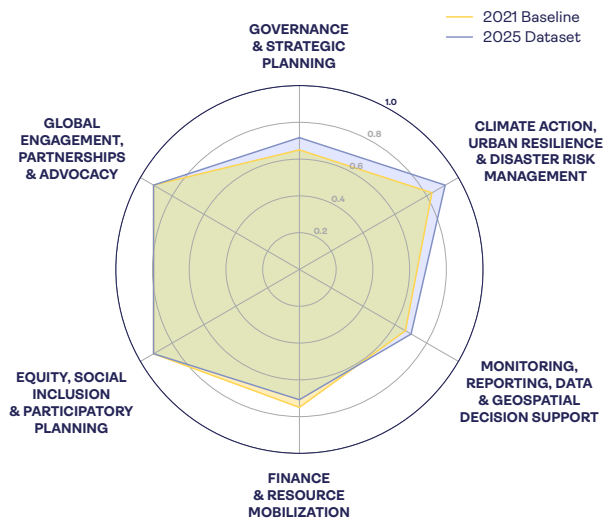
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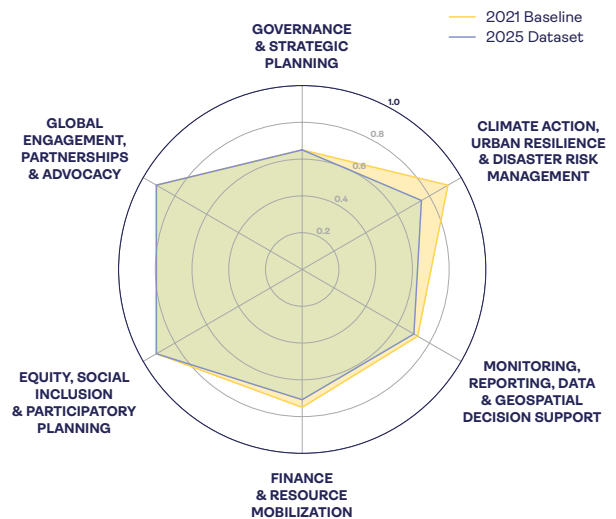
CHENNAI (India)



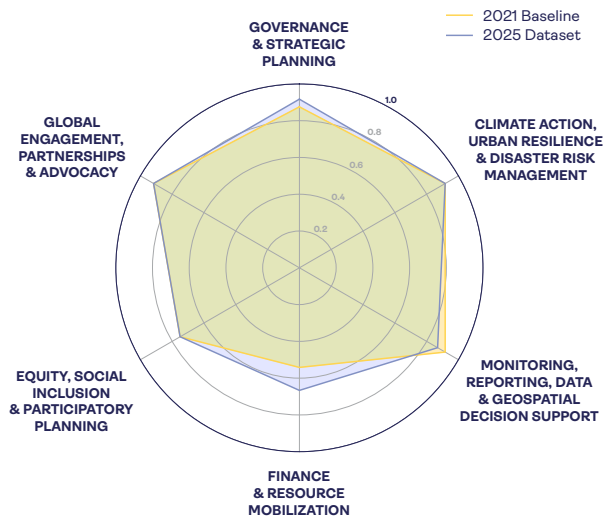
PUNE (India)



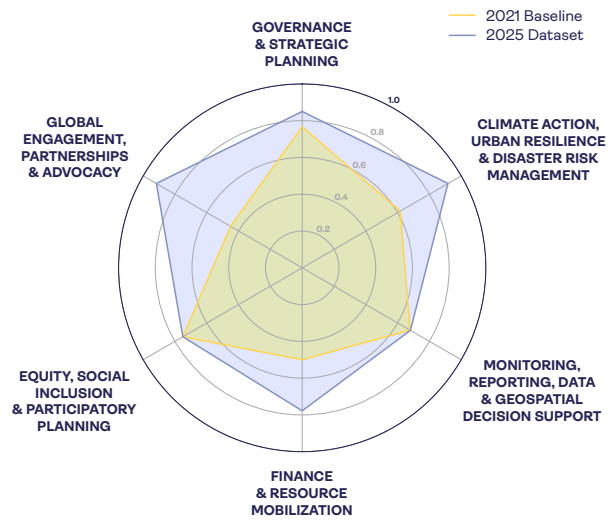
SURAT (India)



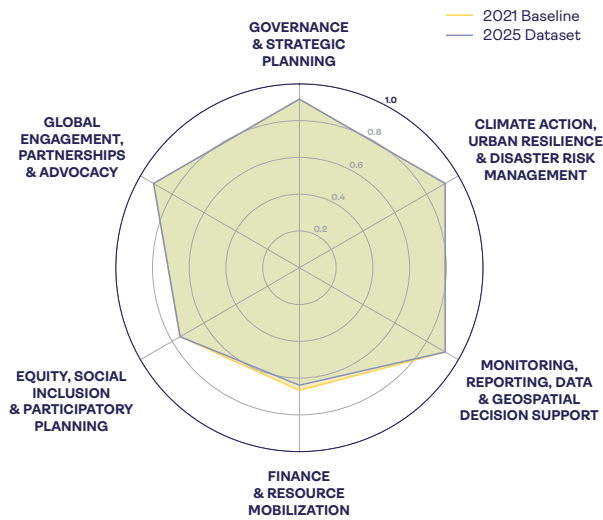
BALIKPAPAN (Indonesia)



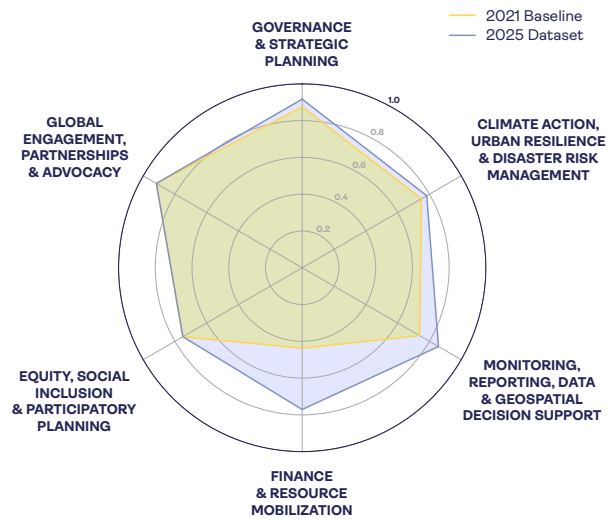
BITUNG (Indonesia)



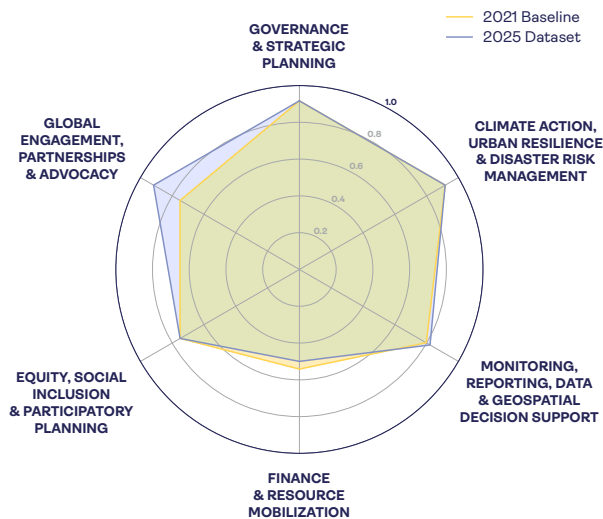
JAKARTA (Indonesia)



PALEMBANG (Indonesia)

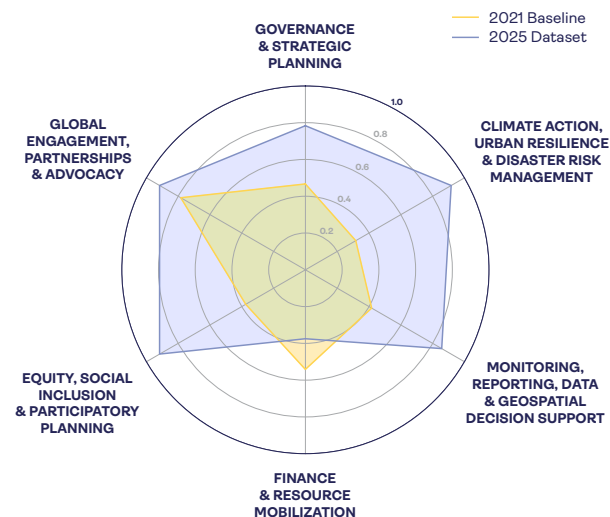


SEMARANG (Indonesia)

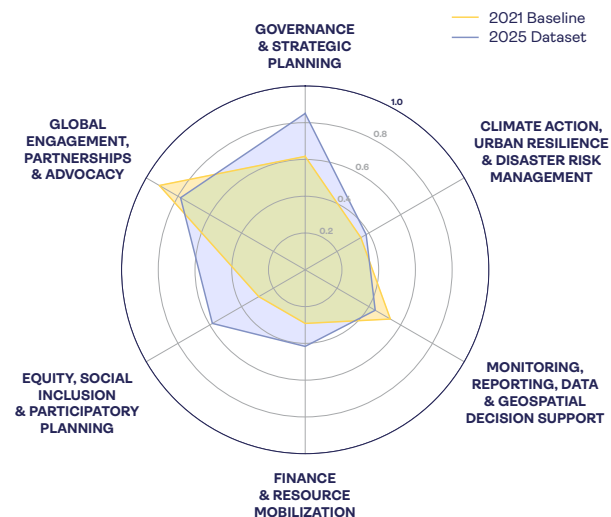


AFRICA

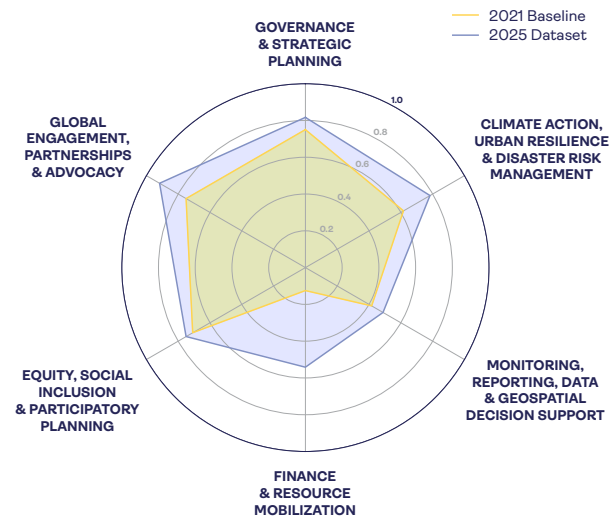
FREETOWN (Sierra Leone)



KIGALI (Rwanda)



MARRAKECH (Morocco)



ANNEX 3. ENABLING AND LONG-TERM SUSTAINABILITY CONDITIONS

	Enabling Conditions	Long-Term Sustainability
	Addressing Challenge 1	
General Conditions	Clear coordination between housing, infrastructure, and planning departments. Transparent monitoring systems.	– Maintenance plans and data updates for upgraded infrastructure. – Periodic infrastructure performance evaluations. – Ongoing land registry updates and dispute resolution systems. – Community stewardship mechanisms for public assets.
Housing	Legal pathways for tenure recognition. Updated zoning and density regulations. Transparent permitting and land valuation systems. Housing finance mechanisms accessible to low-income households.	– Regular affordability audits. – Building safety inspections. – Monitoring displacement risks and land speculation.
Service Provision	Capital investment plans prioritizing underserved areas. Asset management systems for utilities. Community engagement frameworks. Affordable tariff structures with social protections.	– Preventive maintenance schedules. – Water quality and service reliability monitoring.
Economic Inclusion	SME support frameworks and simplified licensing processes. Access to microfinance and digital banking platforms. Partnerships with vocational institutes. Regulatory reforms supporting informal sector formalization.	– Monitoring enterprise survival and job creation rates. – Continuous workforce skills upgrading. – Evaluation of local economic development programs.
	Addressing Challenge 2	
General Conditions	Cross-departmental coordination between planning, environment, and finance. Transparent and real-time monitoring systems.	– Periodic updates and review

	Enabling Conditions	Long-Term Sustainability
	Addressing Challenge 2	
Integrated Adaptation Planning	Access to reliable climate and geospatial data. Legal authority to enforce risk-informed zoning. Dedicated budget allocations for risk assessments and planning updates.	– Periodic updates of hazard maps and climate scenarios. – Monitoring compliance with risk-sensitive land-use regulations. – Integration of climate risk reviews into planning cycles.
Ecosystem Restoration	Environmental protection frameworks and ecological zoning tools. Biodiversity mapping and ecosystem service valuation systems. Urban greening standards and maintenance budgets. Cross-agency coordination between environment and planning departments. Dedicated O&M funding for NbS (urban forestry, wetlands, bioswales), not only capex budgets to sustain nature-based approaches [42].	– Ongoing vegetation management and ecological monitoring. – Community stewardship agreements. – Periodic biodiversity and ecosystem performance assessments.
Resilient Infrastructure	Updated infrastructure and building standards. Access to climate finance instruments. Asset management systems that integrate climate risk. Procurement processes that incorporate resilience criteria. Regulatory standards for water protection and discharge. Hydrological data systems and monitoring infrastructure. Inter-agency coordination across environmental and water departments. Sustainable financing for restoration programs.	– Preventive maintenance of drainage and wastewater systems. – Regular infrastructure inspections and compliance audits. – Post-event performance reviews and design adjustments. – Ongoing water quality monitoring and reporting. – Maintenance of restored riparian buffers and wetlands. – Periodic review of watershed governance effectiveness.
Community Preparedness	Inter-agency emergency coordination frameworks. IT systems capable of real-time alert dissemination. Budget allocations for drills and public outreach. Clear institutional roles and responsibilities.	– Regular testing of early warning systems. – Periodic emergency simulation exercises. – Continuous review of preparedness plans based on updated risk data.

	Enabling Conditions	Long-Term Sustainability
	Addressing Challenge 3 [48] [50]	
General Conditions	Interdepartmental coordination between planning, transport, and public works. Updated zoning codes and land-use regulations. Integrated capital investment planning frameworks.	– Periodic review of land-use and infrastructure alignment. – Monitoring service efficiency and infrastructure utilization rates. – Adjustment of growth strategies based on demographic and economic trends. – Adaptive policy adjustments based on performance data.
Integrated Spatial Planning	Transparent permitting and land administration systems. Environmental performance standards for commercial activity. Coordination between tourism and infrastructure departments. Certification programs for sustainable tourism operators.	– Monitoring tourism-related infrastructure demand. – Periodic assessment of environmental impacts and carrying capacity.
Infrastructure Modernization	Stable transit financing mechanisms. Regulatory authority for parking and congestion management. Data-sharing agreements among mobility providers. Dedicated funding for non-motorized transport infrastructure.	– Preventive maintenance of fleets and infrastructure. – Monitoring ridership, congestion levels, and service reliability. – Periodic updates to mobility master plans.
Service Optimization	Regulatory standards for waste and wastewater management. Asset management systems for utility networks. Sustainable tariff structures balanced with affordability protections. Public awareness programs to promote waste sorting and water conservation. Baseline data and agreed shared metrics across jurisdictions (waste volumes, service coverage, disposal pathways) to avoid fragmented approaches and to support feasibility work [59].	– Routine infrastructure maintenance schedules. – Monitoring waste diversion rates and water treatment performance. – Periodic system audits and capacity reviews.

	Enabling Conditions	Long-Term Sustainability
	Addressing Challenge 3 [48] [50]	
Improve Management	Clear service-level standards for infrastructure performance. Integrated capital programming frameworks linking demand assessment to medium-term investment plans. Data systems that track asset condition, service reliability, and deterioration rates. Budget rules that protect maintenance allocations from diversion to short-term capital expansion.	– Institutionalized life cycle evaluation programs covering service performance, user satisfaction, physical integrity, safety, environmental impact, and equity of access. – Periodic reassessment of infrastructure demand, feeding performance data back into planning cycles (closing the life-cycle loop). – Dedicated renewal funds to prevent maintenance backlogs and premature asset deterioration.
	Addressing Challenge 4	
General Conditions	Interdepartmental coordination between planning, transport, and public works.	– Periodic review of GHG reduction. – Monitoring energy efficiency and infrastructure utilization rates.
Building Efficiency	Enforceable building codes and inspection systems. Access to affordable retrofit financing. Skilled labor and technical expertise. Public awareness campaigns promoting energy efficiency.	– Periodic code updates reflecting technological advancements. – Ongoing performance audits of public buildings. – Monitoring reductions in building energy intensity.
Renewable and Low-Carbon Energy Systems	Grid integration policies and net metering frameworks. Legal pathways for energy cooperatives. Public-private partnership (PPP) structures. Access to climate and green finance instruments.	– Maintenance and monitoring of renewable installations. – Financial models ensuring long-term viability of energy cooperatives. – Continuous grid modernization and resilience upgrades.
Promote Circular Economy	Regulatory frameworks for EPR and waste reduction. Infrastructure for recycling and composting. Market demand for recycled materials. Public awareness campaigns.	– Monitoring waste diversion and landfill reduction rates. – Periodic review of circular economy policies. – Market development for secondary materials.

	Enabling Conditions	Long-Term Sustainability
	Addressing Challenge 4	
Integration of Agriculture and Land Uses	Land-use coordination mechanisms at the urban-rural interface. Access to technical training and agricultural data systems. Financial incentives for sustainable farming practices. Monitoring systems for agricultural emissions.	– Periodic soil health and carbon assessments. – Ongoing farmer capacity building. – Alignment of agricultural policy with evolving climate targets.
	Leveraging Cross-Cutting Enablers 1	
Institutionalize Integrated Urban Planning	Clear legal mandates for municipal planning authority. Reliable spatial and socioeconomic data systems. Dedicated planning budgets and skilled staff. Formal mechanisms for interdepartmental coordination.	– Periodic plan reviews aligned with demographic, economic, and climate trends. – Public reporting on strategic implementation progress. – Institutional continuity across political cycles.
Multilevel Coordination	Legal frameworks supporting intergovernmental coordination. Transparent fiscal transfer mechanisms. Shared regional data platforms. Political commitment across levels of government. Clear vertical and horizontal coordination mechanisms [54]. Formalized dialogue structures embedded in policy cycles (e.g., NDC reviews) [54]. Transparent fiscal transfer systems [54]. Project preparation facilities to de-risk local investments [54]. Institutional continuity beyond political cycles [54].	– Institutionalized regional coordination forums. – Regular evaluation of intergovernmental collaboration effectiveness. – Clear accountability frameworks for joint projects.
Planning and Policy Alignments	Transparent budgeting systems. Institutional mandates for monitoring and evaluation. Data-sharing agreements across departments. Leadership commitment to performance-based governance.	– Institutionalized annual reporting cycles. – Adaptive refinement of strategies based on evidence. – Continuous strengthening of planning-finance integration.

	Enabling Conditions	Long-Term Sustainability
	Leveraging Cross-Cutting Enablers 2	
Integrated Data Platform	Legal frameworks enabling interdepartmental data sharing. Dedicated IT budgets and skilled personnel. Procurement standards that prioritize interoperability and open standards. Cybersecurity and data protection safeguards.	– Regular system upgrades and compatibility reviews. – Continuous integration of new datasets and technologies. – Institutionalized data governance units within municipal administration.
Data Governance	Clear data governance policy. Institutional mandates for regular reporting. Training programs for municipal staff in data management. Transparent open-data standards.	– Periodic review and refinement of indicators. – Public disclosure mechanisms that build trust and accountability. – Institutional memory through documented data protocols.
Data-Driven Investment	Leadership commitment to evidence-based governance. Budgeting frameworks aligned with measurable outputs. Analytical capacity within planning and finance departments. Clear transparency and disclosure policies.	– Institutionalized monitoring and evaluation (M&E) units. – Routine policy review cycles informed by performance data. – Continuous improvement processes embedded in administrative practice.
Digital Innovation	Reliable broadband infrastructure. Cybersecurity investment and regulatory clarity. Procurement frameworks that ensure ethical and transparent technology deployment. Capacity-building programs for digital governance.	– Regular system audits and security assessments. – Updates to privacy standards as technology evolves. – Evaluation of cost-effectiveness and public benefit of digital investments.
	Leveraging Cross-Cutting Enablers 3	
Participation	Legal frameworks supporting public participation. Trained facilitators and engagement specialists within municipal institutions. Clear communication strategies in multiple languages and formats.	– Periodic evaluation of participation quality and representativeness. – Institutionalization of engagement processes beyond political cycles. – Continuous refinement of participatory methods based on feedback.

	Enabling Conditions	Long-Term Sustainability
	Leveraging Cross-Cutting Enablers 3	
Social Inclusion	Institutional mandates for gender and social inclusion. Access to disaggregated data and equity indicators. Capacity-building for municipal staff on inclusive planning. Transparent monitoring and reporting systems.	– Regular review of equity performance indicators. – Public disclosure of inclusion outcomes. – Adaptive policy adjustments to address emerging disparities.
Inclusive Governance	Institutional mandates for gender and social inclusion. Access to disaggregated data and equity indicators. Capacity-building for municipal staff on inclusive planning. Transparent monitoring and reporting systems.	– Regular review of equity performance indicators. – Public disclosure of inclusion outcomes. – Adaptive policy adjustments to address emerging disparities.
Transparency	Open data and transparency legislation. Clear reporting and disclosure procedures. Accessible communication channels. Institutional culture supportive of accountability.	– Regular public reporting cycles. – Independent evaluation mechanisms. – Continuous dialogue between municipal institutions and residents.
	Leveraging Cross-Cutting Enablers 4	
General Condition	Establish clear governance, transparency, and accountability frameworks for partnerships, including defined roles and responsibilities, public disclosure of agreements, measurable performance indicators, and long-term engagement strategies that build trust with private and civil society partners [60].	
Municipal Financial System	Transparent budgeting and accounting systems. Legal authority for revenue collection and financial management reforms. Capacity within municipal finance departments. Political commitment to fiscal transparency.	– Regular financial performance reviews. – Debt sustainability monitoring. – Institutionalized fiscal reporting and disclosure practices.
Diverse Financing Instruments	Legal frameworks for bond issuance and PPPs. Credit-worthiness and transparent fiscal reporting. Project preparation and financial structuring expertise. Clear risk-sharing mechanisms.	– Ongoing evaluation of PPP performance and risk allocation. – Transparent impact reporting for bond-financed projects. – Monitoring fiscal exposure and contingent liabilities.

	Enabling Conditions	Long-Term Sustainability
	Leveraging Cross-Cutting Enablers 4	
Project Preparation	Dedicated budget allocations for project preparation. Procurement systems aligned with transparency and competitiveness. Skilled personnel in finance, engineering, and environmental assessment. Access to advisory support and technical assistance.	– Maintenance of a rolling pipeline of priority projects. – Continuous strengthening of procurement and contract management capacity. – Post-implementation evaluation to inform future investment design.
Partnerships and International Platforms	Institutional capacity for international engagement. Transparent reporting systems aligned with global standards. Clear mandates for partnership development. Communication strategies that attract investors and partners. Establish clear governance, transparency, and accountability frameworks for partnerships, including defined roles and responsibilities, public disclosure of agreements, measurable performance indicators, and long-term engagement strategies that build trust with private and civil society partners [60].	– Institutionalized investor relations functions within municipal administrations. – Continuous monitoring of financial performance and social impact. – Adaptive financing strategies responsive to market evolution.
Portfolio-Based Financing	Legal frameworks permitting inter-municipal cooperation and pooled financing. Robust financial reporting systems that allow standardized monitoring across project portfolios. Creditworthiness assessments that account for diversified revenue streams. Technical capacity to structure aggregated investment vehicles.	– Monitoring portfolio-level financial and sustainability performance indicators. – Reinvestment of returns or savings into additional sustainable infrastructure. – Institutionalization of portfolio management functions within municipal finance departments. – Periodic evaluation of risk distribution and fiscal exposure across bundled investments.

	Enabling Conditions	Long-Term Sustainability
	Leveraging Cross-Cutting Enablers 5	
Administrative Capacity	Dedicated training budgets. Institutional mandates for professional development. Leadership commitment to organizational learning. Time allocation for staff participation in training programs.	– Institutionalized training cycles and performance evaluations. – Retention strategies for skilled personnel. – Continuous updating of operational procedures as systems evolve.
Project Implementation and Procurement	Clear procurement legislation and compliance mechanisms. Skilled contract management personnel. Digital tools for tracking project milestones and expenditures. Institutional safeguards against conflicts of interest.	– Periodic review of procurement performance. – Continuous refinement of contract templates and procedures. – Strengthened oversight and accountability mechanisms.
Peer-Learning and Knowledge Exchange	Institutional mandates for external engagement. Staff capacity for documentation and knowledge sharing. Budget allocation for participation in networks and exchanges. Communication strategies highlighting local innovations.	– Institutional memory systems capturing lessons from exchanges. – Ongoing participation in peer networks. – Continuous adaptation of external good practices.
Cross-Sectoral Partnerships	Clear partnership policies and conflict-of-interest safeguards. Transparent communication channels. Legal frameworks supporting collaboration agreements. Institutional capacity to manage multi-stakeholder partnerships.	– Regular evaluation of partnership effectiveness. – Renewal of collaboration agreements based on performance. – Strengthened trust and mutual accountability across sectors.

ANNEX 4. LEVELLING-UP AND STRATEGIC ENTRY POINTS FOR CITIES

URBAN DESIGN AND PLANNING

Level-up

Cities already implementing TOD can take further steps to advance their initiatives:

- Implementing *catenary-free light rail* to minimize visual pollution but also provide public transportation with limited spaces for development.
- Combining with innovative finance mechanisms, e.g., green bonds to sustain transit investment in supporting TOD development.
- Upscaling TOD implementation with people-centered approach to improve mobility and ensure equity.

Cities already advancing compact, mixed-use development can take the next step by embedding *climate resilience metrics* directly into zoning and design codes and control; urban growth by setting urban growth boundaries. In addition, loosening strict zoning rules can improve elasticity to promote mixed-use and integration of green infrastructure. Cities should also advance current planning systems and welcome strategic planning frameworks with integrated, participatory, and data-driven planning approaches.

Strategic Entry Point

Cities new to implementing TOD can begin by expanding transport at lower costs and implementing practices to discourage private car use, and further encouraging high-density, mixed-use developments around transit hubs. Strategic entry points are:

- Aligning land use policies and zoning rules for TOD development.
- Transitioning bus fleets to electric and expanding BRT networks.
- Implementing traffic congestion pricing or increasing parking fees.

Cities new to promoting mixed-use can begin by mapping urban growth and land use changes to identify the areas for prioritized action and align infrastructure planning with land uses. This requires the crucial kickoff in integrating GIS and predictive analytics into urban planning.

CLIMATE RESILIENCE AND RISK MANAGEMENT

Level-up

For cities already implementing initiatives to prevent natural hazards and increase climate resilience, the next step could be to take more proactive actions in improving cities' capacity to recover, such as:

- Implement data-driven strategies by combining AIoT technology and smart sensors for early warning and monitoring systems.
- Regulate rules for sustainable construction (e.g. green building standards).

In addition, if mitigation and adaptation strategies have been taken but the city is still facing difficulties dealing with the negative effects of climate change, the city should seek additional Loss and Damage mechanisms.

Strategic Entry Point

Cities new to or that have just begun with climate resilience initiatives can start with prevention and protection, in particular early warning to take advanced actions. These should help to reduce vulnerability from climate-related hazards. Actions below are recommended:

- Identifying risks and set priorities for protection.
- Expanding green infrastructure to manage stormwater and runoff.
- Enforcing zoning regulations and restrict construction in high-risk areas.
- Implementing climate-resilient drainage systems.

WASTE/WASTEWATER MANAGEMENT

Level-up

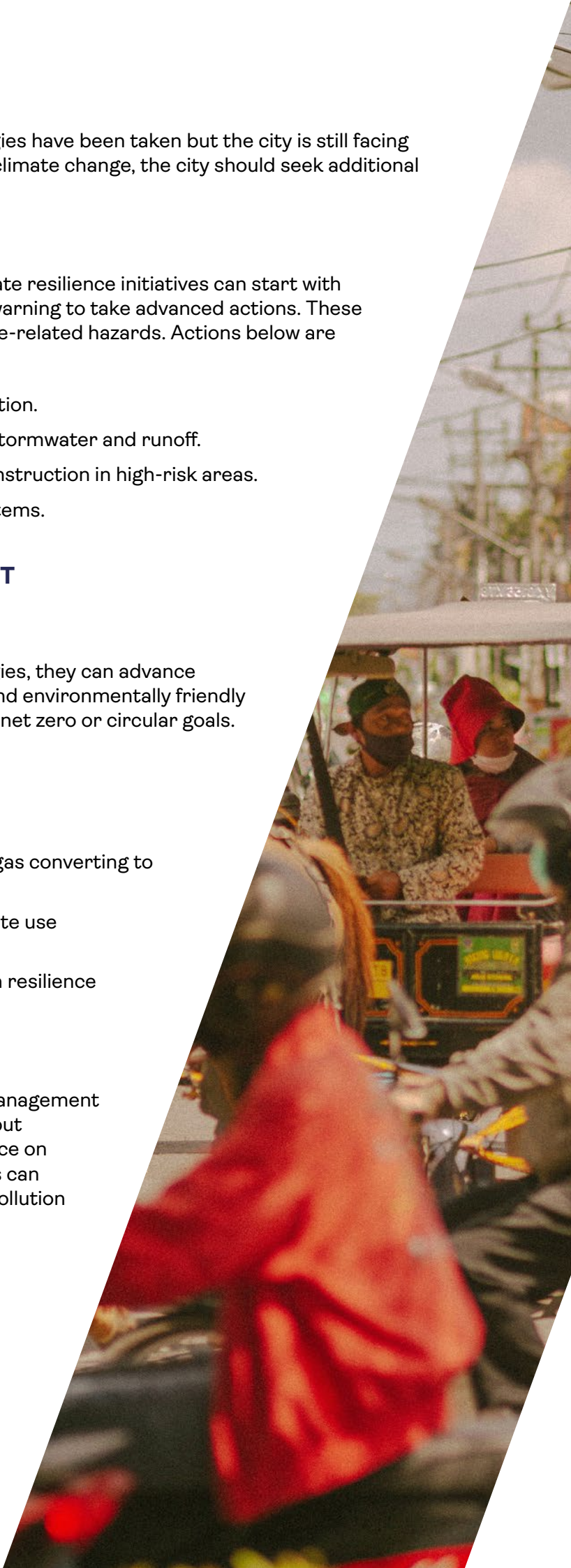
For cities that have been implementing strategies, they can advance existing works and provide more sustainable and environmentally friendly treatment, to be more proactive to contribute net zero or circular goals. Levelling-up strategies are suggested as:

- Regulating and reducing single-use plastics.
- Establishing deposit-return systems.
- Exploring Waste-to-Energy options (e.g. biogas converting to renewable energy).
- Involving local stakeholders in water and waste use managements.
- Implementing green infrastructure for urban resilience planning.

Strategic Entry Point

Cities lacking systematic waste/wastewater management mechanisms require immediate actions to be put forward by solving the main issue of high reliance on landfills and discharge to pollution: These cities can begin with actions as below to prevent waste pollution and further harm to public health by:

- Developing civic education programs and local partnerships to advocate appropriate composting practices.
- Upgrading of landfill management system.
- Seeking alternative waste management approaches.



- Regulating strict standards and surveillance to enforce illegal dumping, in particular to protect identify environmental sensitive areas.

NATURE-BASED SOLUTIONS

Level-up

Cities already implementing greening strategies and NbS should consider upscale implementation and amending land uses and development regulation in order to secure connectivity. For example:

- Implement remediation standards to renature downgraded and abandoned sites into green infrastructure.
- Establishing Green Infrastructure policies and strengthening reforestation policies.
- Integrating ecosystem protection into land use and urban expansion plans to avoid fragmentation.

Strategic Entry Point

Cities new to promoting GI can begin with implementation at a smaller scale, such as establishing tree-planting initiatives and urban greening strategies, or developing community gardens and green roofs. Communities can be trained to build local capacity and enhance ecological and social outcomes through their participation.

In addition, cities should first identify sensitive areas to protect by leveraging geospatial tools to set priority.

AFFORDABLE HOUSING

Level-up

Cities currently implementing affordable housing policies should explore advanced collaborative strategies and financial mechanisms for enhancement:

- Implementing co-financing mechanisms, including contributions from community, government, or developers, to enhance the budget for housing development.
- Developing regulations and incorporating informal areas into land use and planning frameworks.

Strategic Entry Point

Cities confronting significant informality and inadequate housing supply should implement proactive measures:

- Identifying vacant or industrial land within urban areas for redevelopment into new housing.
- Offering incremental housing assistance, including subsidies or incentives for the reconstruction of aging and hazardous structures.
- Enhancing public-private partnerships by offering incentives to developers and non-governmental organizations for the distribution of affordable housing.

INNOVATIVE FINANCE

Level-up

For cities that have already been leveraging multiple financial instruments, actions can be taken to level up through:

- Strengthening decision capacity in leveraging multiple financial instruments.
- Strengthening existing cooperation between local governments and institutions.
- Integrating investment planning in urban planning and climate change adaptation, and expanding the use of blended finance to different fields.
- Issuing green bonds or green development funds.

Strategic Entry Point

For cities lacking innovative financial mechanisms to support infrastructure/urban development, searching entities and institutions for support can be an entry point, such as leveraging PPPs and international finance mechanisms (e.g. build-operate transfer, franchise, or joint ventures; or ICLEI TAP). Financial mechanisms can be diagnosed through ICLEI's Climate Finance Decision Making Tree.

In addition, cities can start from establishing housing finance mechanisms through issuing density bonuses or incentives for developers to leverage PPPs in building affordable units, in order to resolve the vicious cycle between urbanization and housing backlog.





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IN PARTNERSHIP WITH:

