Crisis Resilient Urban Futures

The Future of Asian & Pacific Cities 2023

ESCAP
Economic and Social Commission for Asia and the Pacific

UN-HABITAT

*The shaded areas of the map indicate ESCAP members and associate members.**

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The Economic and Social Commission for Asia and the Pacific (ESCAP) is the most inclusive intergovernmental platform in the Asia-Pacific region. The Commission promotes cooperation among its 53 member States and 9 associate members in pursuit of solutions to sustainable development challenges. ESCAP is one of the five regional commissions of the United Nations.

The ESCAP secretariat supports inclusive, resilient and sustainable development in the region by generating action-oriented knowledge, and by providing technical assistance and capacity-building services in support of national and local development objectives, regional agreements and the implementation of the 2030 Agenda for Sustainable Development.

The United Nations Human Settlements Programme (UN-Habitat) is headquartered in Nairobi, Kenya. The Regional Office for Asia and the Pacific serves the region and country programmes in the region from Fukuoka, Japan and from its supporting office in Bangkok, Thailand. Within the United Nations system, UN-Habitat is a focal point for the monitoring, evaluation and implementation of the New Urban Agenda (Habitat III, 2016).

UN-Habitat promotes with governments and partners the Sustainable Development Goals, in particular Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable. In the urbanizing world, UN-Habitat promotes transformative change in cities and human settlements through knowledge, policy advice, technical assistance and collaborative action to leave no one and no place behind. Its programmes aim to advance sustainable urbanization as a driver of development and peace towards building a better quality of life for all.

Crisis Resilient Urban Futures

The Future of Asian & Pacific Cities 2023

© jamesteohart - Low angle shot of modern glass buildings and green with clear sky background

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Foreword

Armida Salsiah Alisjahbana

Under-Secretary-General of the United Nations and Executive Secretary of the United Nations Economic and Social Commission for Asia and the Pacific

ESCAP
Economic and Social Commission for Asia and the Pacific

The path to a sustainable future for Asia and the Pacific runs through our region's cities — economic, social and cultural centres for nearly 2.5 billion people and home to the world's largest urban population and number of people living in informal settlements.

The megatrend of urbanization across the Asia-Pacific region has not come without difficulties. Many of the multiple crises the world faces intersect in our cities, creating new challenges and further exposing long-standing issues, such as inequality, urban poverty, affordable housing and an expanding infrastructure gap. Our cities are where these interlinked crises are most visible, often affecting the most vulnerable communities.

This report provides guidance on how cities can better manage urbanization, while building resilience to crises and ensuring that future development is sustainable. To do so requires a focus on four thematic areas:

- First, we must ensure that urban and territorial planning remains the foundation of how our cities are developed and managed. Especially in times of crisis, holistic urban planning and housing policies are essential to reaping the benefits of safe, sustainable and livable cities.

- Second, as the climate emergency continues to generate more severe impacts, our cities must lead the transition to low-carbon and resilient-development pathways. While shifting to low-carbon energy sources and transformative adaptation, cities need to leverage nature-based solutions for integrated responses to the climate, clean air and biodiversity crises.

- Third, our cities must leverage digital innovation with inclusive urban governance policies to build resilience, while overcoming the digital divide. The pandemic has highlighted the urgency to ensure that no one and no place is left behind in urban digital transformations.

- Finally, the urgent need to respond to multiple crises must be matched with a resolve to safeguard urban finances. A climate responsive urban economic recovery must expand and diversify local revenue sources, strengthen transparency measures in municipal finance systems, use land-based financing instruments and incentivize private sector investment.

Given the multidimensional nature of crises, cities cannot face these challenges alone. Multi-level governance, the engagement of all stakeholders and strengthened partnerships are essential if we are to build crisis-resilient cities. I remain grateful to UN-Habitat for our collaboration on this important flagship publication and for our continued commitment to promote sustainable urban development across our region.

In May of this year, a milestone was achieved when Member States at the seventy-ninth session of the Commission adopted a resolution recognizing the need to build urban resilience against interlinked crises and reaffirming the vital role of ESCAP in fostering regional cooperation for sustainable urban development and localization of the Sustainable Development Goals.

We see hope in the dynamism and resolve of the region's cities — not just in recovering from the pandemic, but also as testing grounds for policy and innovation. I am hopeful that through local action, regional cooperation and strong partnerships, the recommendations in this report will help us to create new approaches and solutions to our shared urban challenges.

UN-HABITAT

Maimunah Mohd Sharif

Under-Secretary-General of the United Nations and Executive Director of the United Nations Human Settlements Programme

The present and future of humanity are in cities. More than half of the world's population lives in cities and by 2050, this proportion is expected to reach nearly two thirds. The vision of Sustainable Development Goal 11 – to make cities and communities inclusive, safe, resilient, and sustainable – has thus never been more critical than today. Yet, vast challenges exist in achieving this vision, and alarmingly, we are nowhere close to meeting the Goal's targets by the 2030 deadline.

The recently launched Sustainable Development Goal 11 global synthesis report coordinated by UN-Habitat shows how far we are from achieving the targets set in 2015 to ensure a better quality of life across our cities and human settlements. Some 2.8 billion people are estimated to be affected by different forms of housing inadequacy, including at least 318 million people experiencing homelessness. Globally, 2.2 billion people still lack safely managed drinking water, 3.4 billion lack safely managed sanitation and 1.9 billion lack hygiene services. A total of 99 per cent of urban residents are exposed to air pollution above World Health Organization standards. These figures are especially challenging in today's context of interlocking crises that are sending shock waves across regions, countries and communities, including in the Asia and Pacific region.

This report on the future and resilience of Asian and Pacific cities is especially timely. It brings to light the risks faced by the region's 2.48 billion urban dwellers in the face of shocks and stressors, while calling for urgent action from public and private stakeholders at all levels. The report emphasizes key themes – urban and territorial planning; climate resilience; digital transformation and finance – as well as specific sub-themes, such as housing adequacy and local action to move cities in the region towards more resilient and sustainable futures. These same themes resonate with many of the priorities of the 134 United Nations Member States, which convened this year at the second session of the United Nations Habitat Assembly in Nairobi, and adopted resolutions for scaled and accelerated action pertaining to adequate housing, localization, climate, planning and smart cities.

The time is now to translate resolutions and recommendations into concrete actions and investments. The immense opportunities inherent to urbanization must be leveraged fully in Asia-Pacific cities to ensure that economic growth translates into shared prosperity for all across cities. We must also support the uptake and scaling of the numerous effective practices led by local governments and stakeholders that are already demonstrating the potential for change. In this vein, I appreciate our long-standing engagement with the Economic and Social Commission for Asia and the Pacific and our other partners to guide sustainable urbanization policy and practice in the region, including through the collaborative preparation of this report.

About the Report

The Future of Asian & Pacific Cities Report 2023 entitled, “Crisis Resilient Urban Futures”, provides a comprehensive analysis and assessment of sustainable urban development in the Asia and Pacific region at a time of great disruption and uncertainty resulting from multiple interlinked global crises in a post-pandemic era. This report aims to extend valuable insights into the spatial, economic, social, environmental and governance aspects of cities, offering holistic policy recommendations towards a sustainable urban recovery from these crises.

Understanding the dynamics and characteristics of its cities is crucial for national and local governments, businesses, local communities, researchers and urban planners. Through this report, ESCAP and UN-Habitat continue to work together to provide an updated, reliable resource for decision makers seeking to gain a deeper understanding of the trends, challenges and future opportunities within the landscape of the cities in Asia and the Pacific. The report builds on three previous editions in this series:

The Future of Asian & Pacific Cities 2019; The State of Asian and Pacific Cities 2015; and The State of Asian Cities 2010/11.

In each of these reports, the key existing and emerging trends in urban development within the region are explored. The present report continues to take a forward-looking perspective, capturing the transformative messages of the New Urban Agenda (2016) and continuing the thematic tracks established in the 2019 edition of this report. The current edition also has set a much-needed agenda for a sustainable urban recovery across the region.

The 2023 report is released in a year when progress towards realizing Sustainable Development Goal 11 on sustainable cities and communities is under review globally by the General Assembly. This year also marks the halfway point of the 2030 Agenda for Sustainable Development, providing an opportune time for reflection, recalibration and reinvigoration of efforts towards achieving sustainable development at all levels of government and society. The report calls for a renewed commitment, collaboration and innovation to overcome local challenges and create a more equitable and sustainable urban future for all to “leave no one and no place behind”.

As always, this flagship report combines a wealth of primary and secondary data, incorporating information from reputable sources, such as national statistical agencies, cities, academic and research institutions, in addition to international organizations and development partners. An extensive research process involving data collection, analysis and interpretation was carried out to ensure the accuracy and reliability of the information presented.

Throughout the report, case studies and comparative analysis are used to provide a comprehensive understanding of the similarities, differences and practices across various typologies of cities in the Asia-Pacific region. The findings and insights presented are intended to inform and guide decision makers in developing more informed urban policy formulation, investment strategies and urban planning approaches.

It is expected that this report will serve as a valuable resource for governments, civil society organizations, businesses, researchers, development partners and anyone interested in gaining a deeper understanding of the dynamic and evolving nature of Asia-Pacific cities.

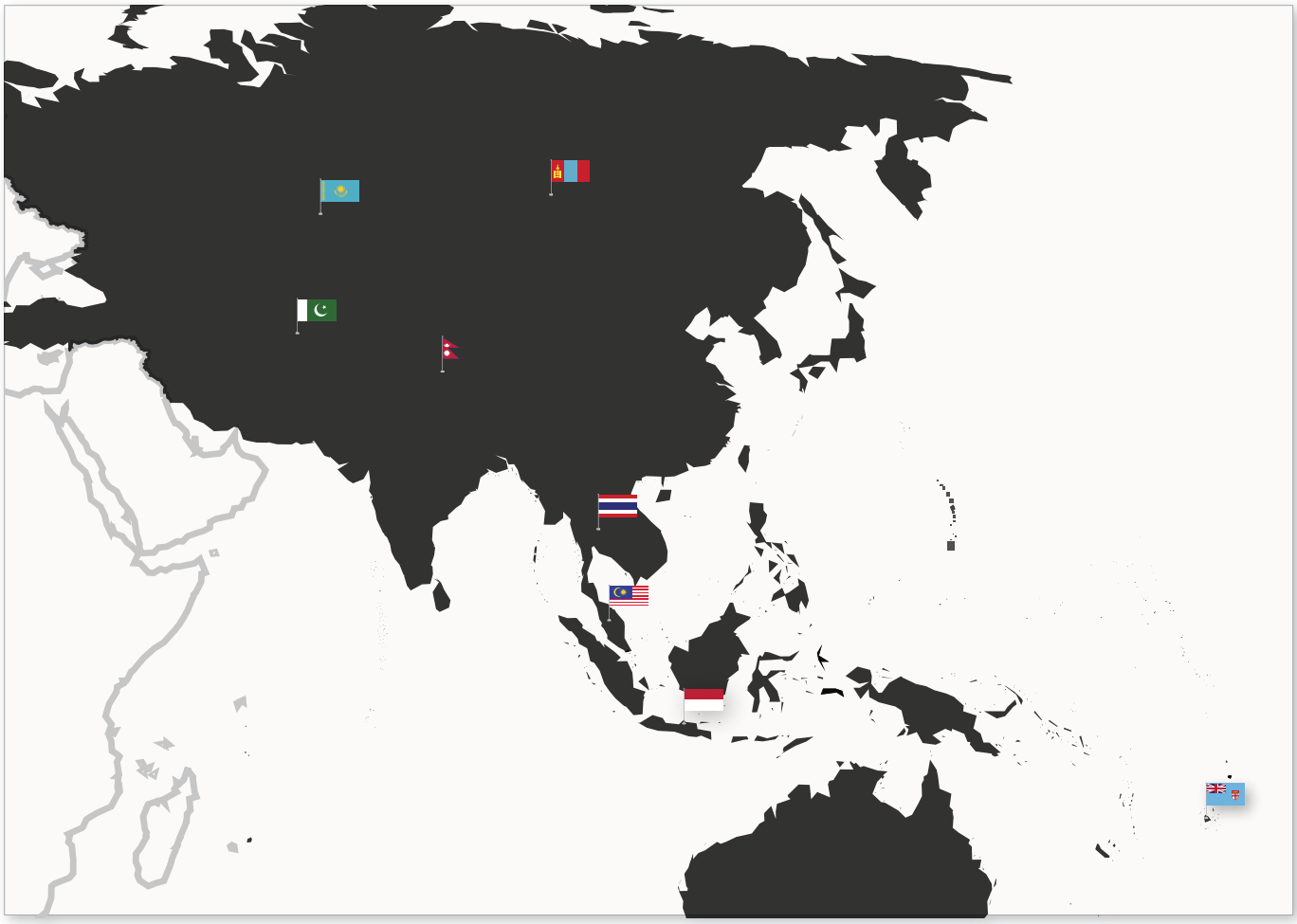
Significant contributions from national and local governments, development partners, civil society, academia, the private sector and other stakeholders to the report’s contents were also made during the dedicated reviews of Sustainable Development Goal 11 which took place as part of the regional and subregional multi-stakeholder forums on the implementation of the Sustainable Development Goals convened by ESCAP:

- Sixth North East Asia Multistakeholder Forum on Sustainable Development, 7–8 September 2022, Ulaanbaatar, Mongolia
- Sixth North and Central Asia Multistakeholder Forum on Sustainable Development, 6–7 October 2022, Almaty, Kazakhstan
- Sixth South East Asian Multistakeholder Forum on Sustainable Development, 7–8 November 2022, Bangkok, Thailand
- Sixth South and South-West Asia Multistakeholder Forum on the Sustainable Development, 5–7 December 2022, Islamabad, Pakistan
- Sixth Pacific Multistakeholder Forum on Sustainable Development, 6–7 December 2022, Suva, Fiji
- SDG11 Roundtable, Tenth Asia-Pacific Forum on Sustainable Development, 27–30 March 2023, Bangkok, Thailand

Dedicated in-person thematic consultations on the report took place at the following events:

- Ninth CityNet Congress, 20–24 September 2022, Kuala Lumpur, Malaysia
- ESCAP Expert Group Meeting on "Localizing the Sustainable Development Goals to Address Interlinked Crises in the Post-Pandemic era", as part of the Regional Observance of World Habitat Day, 3 October 2022, Bangkok, Thailand
- Twenty-Eighth World Congress of the Eastern Regional Organisation for Planning and Human Settlements, 5–8 October 2022, Surabaya, Indonesia
- Fifth Spatial Planning Platform Meeting, 1-3 February 2023, Kathmandu hosted by UN-Habitat ROAP, the Ministry of Land, Infrastructure, Transport and Tourism, Japan, and the Ministry of Urban Development, Nepal

These in-person consultative meetings were combined with numerous virtual consultations with experts and stakeholders.



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© Ryoo Geon Uk - a group of tall buildings

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SUWON CITY

ADB

THE UNIVERSITY OF MELBOURNE

Melbourne Centre for Cities

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Abbreviations & Acronyms

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ASEAN	Association of Southeast Asian Nations
CCTV	closed-circuit television
CDC	Center for Disease Control and Prevention
COP	Conference of Parties
DEGURBA	degree of urbanization
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GIS	geographic information system
HFCS	hydrofluorocarbons
ICT	information and communications technologies
IDP	internally displaced people
ILO	International Labour Organization
ITU	International Telecommunications Union
MRSC	Municipal Research and Services Center
NDCs	Nationally determined contributions
OHCHR	Office of the United Nations High Commissioner for Human Rights
OECD	Organisation for Economic Co-operation and Development
PPE	personal protective equipment
RLDCs	Regionally and Locally Determined Contributions
ROAP	Regional Office for Asia and the Pacific
SDG	Sustainable Development Goal
SME	small and medium enterprise
SLCPs	short-lived climate pollutants
UN-Habitat	United Nations Human Settlements Programme
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Economic and Scientific Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
VLR	voluntary local review
VSR	voluntary subnational review
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

Cities in Asia and the Pacific face a complex set of interlinked crises, which carry profound implications for the social fabric and development prospects of the region. The consequences of the COVID-19 pandemic are far-reaching, and, as a consequence, cities are still striving to fully recover. Vulnerabilities in affordable housing, insufficient access to basic services and fragile or failing health-care systems have been exposed. Socioeconomic disparities have been exacerbated by unemployment and rising costs. Poverty has increased, often compounded by inadequate access to housing and essential services. As cities grapple with the post-pandemic recovery, ensuring the equitable distribution of resources and support to the most vulnerable is of paramount importance to prevent the exacerbation of existing inequalities.

The economic impact of the pandemic and post-pandemic crises has added a layer of complexity to the urban landscape. Because of disruptions to global food and fuel supply chains, trade and tourism, many cities in Asia and the Pacific have suffered severe economic downturns. This has particularly affected informal workers and marginalized slum communities. The loss of livelihoods and reduced economic opportunities continue to push vulnerable urban populations into greater poverty and marginalization. These challenges are compounded by the climate emergency to which Asia and the Pacific is particularly susceptible. Inadequate urban planning and infrastructure development increases the vulnerability of cities and urban dwellers, particularly in informal settlements to the impacts of climate change.

The convergence of multiple crises combined with marked shifts in urbanization trends call for integrated and equitable approaches to urban development. With a burgeoning population, rapid economic growth, advancing innovation and technology, and increasing industrialization, countries across the region are experiencing unprecedented urban development. As cities continue to grow and infrastructural demands rise, governments and urban planners must tackle issues related to access to affordable housing, infrastructure, mobility, energy, environmental sustainability and social inclusion, and incorporate advancements in digital technologies to ensure that the region's cities can thrive as liveable centres of economic vitality. Understanding these complex urbanization trends is critical to inform policymakers and achieve sustainable development in the Asia-Pacific region. The successful implementation of the 2030 Agenda for Sustainable Development hinges on cities' ability to adopt appropriate innovative policies and technologies, secure urban financing and cultivate capabilities across all tiers of governance to support the implementation of these policies and technologies.

Governments, policymakers and stakeholders must work together to address the interlinked challenges related to the COVID-19 recovery, social inclusion, economic revitalization and the climate emergency to ensure that no one nor place is left behind. Urgent integrated action, innovative digital solutions and participatory approaches are required to navigate these crises and mitigate the disparities that threaten to stall progress towards localizing the Sustainable Development Goals in the region. ESCAP and UN-Habitat with partners have launched this report to support policymakers in their efforts to shape post-pandemic pathways in urban centres. The report focuses on the four key thematic areas: urban and territorial planning; resilient multilevel climate action; digital transformations in cities; and urban finance. In it, the interlinkages between these themes and the opportunities for regional and intermunicipal cooperation to build capacity and enhance progress of cities in the Asia-Pacific region are identified.

Chapter 01

To strengthen urban and territorial planning, the first chapter provides an analysis of the current dynamics faced by cities in the Asia-Pacific region as they grow and evolve spatially, especially due to the consequences of unplanned accelerated urbanization. It is focused on the interconnected network of systems within cities, and the benefits of urban and land-use planning and compact cities to improve quality of life, resilience and sustainability. The role of holistic approaches to urban and territorial planning is fundamental to addressing the challenges related to all aspects of urban life in the region, including mobility, equitable access to services and affordable housing, especially for people living and working in informal settlements, are highlighted in the chapter. The following four policy pathways are recommended for consideration by policymakers in the chapter, which includes a discussion on how they could be implemented:

- Create a policy environment for transformative and resilient urban planning, enabled by multilevel governance;
- Ensure capacity-building and coordination for effective urban planning and local action;
- Develop holistic housing, urban planning, and disaster-risk management policies, strategies and regulations to tackle the affordable housing crises in cities;
- Promote integrated, compact, mixed-use neighbourhoods and cities, supported by public transport and active mobility to meet climate and sustainability targets.

Chapter 02

Climate change and the threats it brings to urban centres in Asia and the Pacific are addressed in the second chapter. The region remains vulnerable to extreme weather events and climate-related hazards, which carry significant implications for cities. The rapid pace of urbanization, often coupled with rising greenhouse gas emissions, inadequate infrastructure, limited financial resources and competing development priorities, complicates efforts to implement effective climate mitigation measures. To advance low-carbon and resilient urban futures, cities in the Asia-Pacific region should consider adopting the following policy recommendations supported by an enabling environment at the national and regional levels:

- Integrate urban communities as key actors to build resilience against climate and other shocks;
- Deploy innovative urban adaptation pathways to address existing and new climate risks;
- Enhance data collection and local evidence to inform and accelerate climate action in cities;
- Shift to low-carbon sources to tackle the urban energy crisis;
- Provide platforms for monitoring, reporting, verifying and integrating multilevel climate action;
- Harmonize and enhance nature in cities to address climate, clean air and biodiversity crises.

Chapter 03

Urban digital transformation in the Asia-Pacific region is the main point of discussion in the third chapter, which is focused on how to ensure inclusivity, accessibility and the equitable distribution of digital technologies, particularly in areas with limited infrastructure and resources. Leveraging partnerships with the private sector presents a significant opportunity to drive innovation, mobilize investment and implement digital solutions at scale, which would ultimately accelerate the region's progress towards attaining sustainable and inclusive smart cities. The following three policy recommendations are immediate actions that could advance urban digital opportunities:

- Develop people-centred national smart city policies as enablers for inclusive and sustainable urban development;
- Enhance urban governance capacity at all levels to design and implement inclusive digital strategies with a clear resilience mindset;
- Promote citizen engagement and multi-stakeholder partnerships for digital transformations in cities.

Chapter 04

Urban finance plays a pivotal role in advancing progress towards realizing the Sustainable Development Goals in the Asia-Pacific region. Adequate financial resources are required to invest in critical areas, such as infrastructure, housing, health care, education and social services, all of which are vital to achieve sustainable and inclusive urban development. Meanwhile, the COVID-19 pandemic and multiple crises continue to strain the financial capacities of many governments in the region, leaving limited fiscal space to allocate funds for investment in urban development. In chapter 4, the urgency of exploring innovative financing mechanisms, public-private partnerships, and domestic and international cooperation to bridge the urban finance gap and ensure the region's resilience and progress towards localizing the Sustainable Development Goals is highlighted, which also includes the following policy pathways:

- Expand, diversify and increase municipal revenue collection to stimulate a local economic recovery;
- Establish a transparent framework for intergovernmental transfers for greater economic resilience against future shocks;
- Ensure that land-based financing instruments are aligned with the development of compact polycentric urban areas;
- Create more stable and predictable policy, regulatory and incentive frameworks to enhance private sector investment for urban economic recovery;
- Promote enabling environments to facilitate climate-responsive urban finance and municipal finance instruments in support of local climate action.

© Julia - Khiva: people in the street of old town

The interconnected nature of the key themes and the need for regional cooperation to foster crisis-resilient urban futures in the Asia-Pacific region are drawn out in the final chapter. Strategic interventions for regional collaboration are proposed, such as voluntary local and subnational reviews, intermunicipal cooperation and road maps to accelerate progress towards achieving Sustainable Development Goal 11 in support of the ESCAP Resolution 79/7, which member States adopted at its seventy-ninth session to advance regional cooperation for sustainable urban development and localization of the Sustainable Development Goals in Asia and the Pacific. Such road maps should focus on technical capacity-building and tools exchange to support multilevel governance, planning, financing and action. Regional urban cooperation platforms promote stronger alliances with national governments, international organizations and climate finance institutions to increase access to resources and support for much needed climate-resilient and sustainable urban development investments. The importance of comprehensive, inclusive and innovative approaches to urban development is emphasized to overcome the challenges posed by multiple crises, including the impacts of the COVID-19 pandemic and the limited fiscal space available to governments.

The cities of the Asia-Pacific region face multiple crises, but they have a unique opportunity to strengthen sustainable urban development and accelerate progress towards localizing the Sustainable Development Goals. The region's continued urbanization and growing capacities provide fertile ground for innovation and collaboration. By embracing crisis-resilient urban development strategies, cities can respond to immediate recovery needs and pave the way for a sustainable and inclusive future. The urgency to build climate-resilient cities and harness digital technologies for enhanced urban planning, multilevel governance and service delivery calls for partnerships at all levels to be leveraged and regional cooperation to be intensified. Through people-centred urban policies, intermunicipal collaboration and innovative financing mechanisms, the cities of Asia and the Pacific can navigate their multi-crises environment. With the right plans, policies, investments and partnerships in place, the region can be well placed to achieve a sustainable urban recovery.

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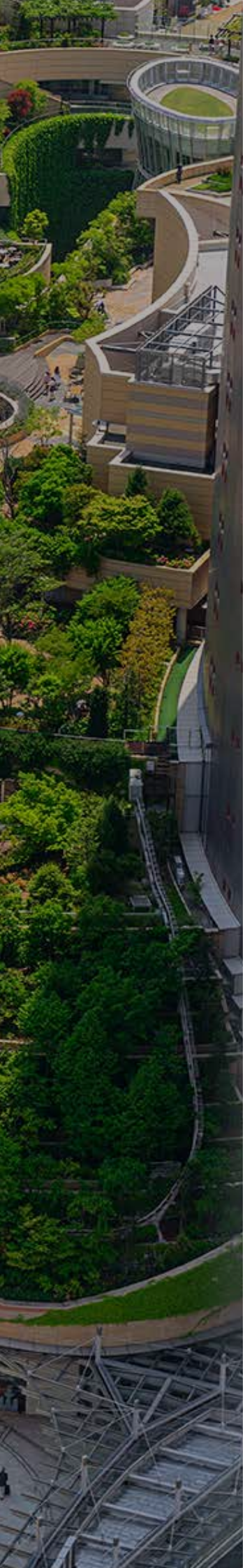
Introduction

Shocks in the city:

Multiple interlinked crises test sustainable urban development



The world is facing multiple and interlinked crises, a perfect storm that is testing the limits of current development paradigms.

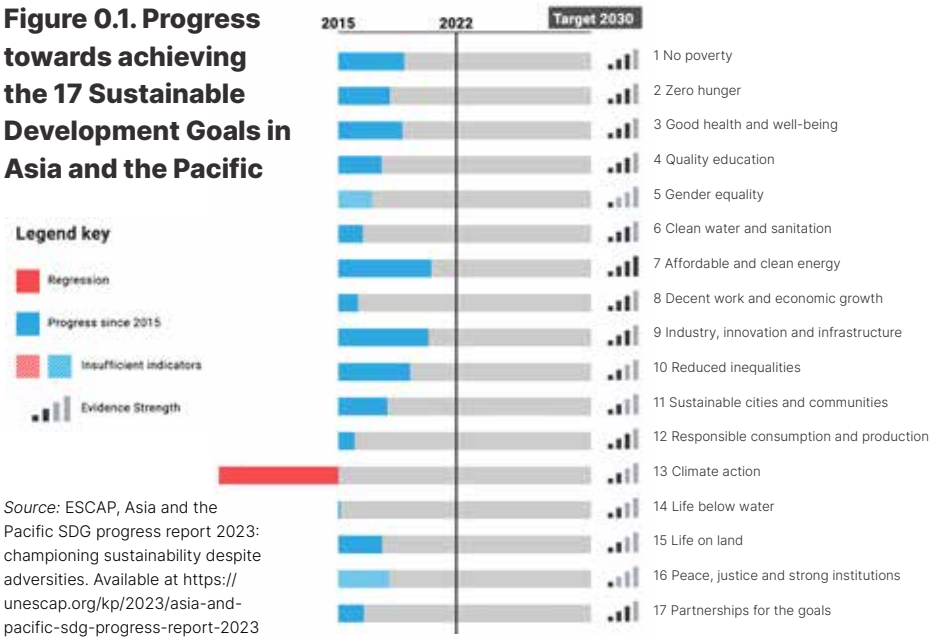
As countries and cities across Asia and the Pacific struggle to recover from the health and socioeconomic crisis resulting from the COVID-19 pandemic, the effects of climate change continue to ravage the region. Geopolitical tensions and the growing food and energy crisis are undermining prospects for a true recovery and are, consequently, placing the aspirations of the New Urban Agenda and localization of the Sustainable Development Goals in the region seemingly out of reach.

Current data from the Economic and Social Commission for Asia and the Pacific (ESCAP) show that the Asia-Pacific region is not on track to achieve any of the Sustainable Development Goals and is regressing with regard to Sustainable Development Goal 13 on climate action. Progress has slowed while the compounding crises have led to rising inflation globally. Higher prices are driving countries, especially low-income countries, into debt distress. Approximately 60 per cent of low-income countries were in debt distress in 2022 compared to 30 per cent in 2015 (WFP, 2022).

Approximately 60 per cent of low-income countries were in debt distress in 2022 compared to 30 per cent in 2015.

Additionally, high inflation is widening inequality and worsening poverty – making it increasingly difficult for economically vulnerable groups to meet basic needs.

Figure 0.1. Progress towards achieving the 17 Sustainable Development Goals in Asia and the Pacific



Source: ESCAP, Asia and the Pacific SDG progress report 2023: championing sustainability despite adversities. Available at https://unescap.org/kp/2023/asia-and-pacific-sdg-progress-report-2023 (accessed on 2 June 2023)

95 per cent of confirmed COVID-19 cases in 2020 were in urban areas, as cities became hotspots for such cases globally due to their concentration of population.

According to UN-Habitat, 95 per cent of confirmed COVID-19 cases in 2020 were in urban areas (UN-Habitat and others, 2020), as cities became hotspots for such cases globally due to their concentration of population. The socioeconomic consequences of the pandemic and the subsequent energy and food crises made worse by the crisis in Ukraine are compounding existing challenges of urbanization. In cities around the world, the COVID-19 pandemic has exposed long-standing vulnerabilities and highlighted the need to comprehensively address such issues as affordability and liveability. Notably, the pandemic has served as a turning point; the need for the region's urban centres to build resilience to future shocks and stressors has never been more evident. Cities across the developing and developed world are again at the frontline of the multiple interlinked crises, and city-level responses remain critical for building resilience and ensuring the achievement of the Sustainable Development Goals.

© tuomaslehtinen - Scenic view of the Lumpini (Lumphini) Park and Bangkok city in Thailand from above

The state of Asian and Pacific cities

Cities in the region continue to expand. Asia and the Pacific is home to 54 per cent of the world's urban population, with more than 50 per cent of the region's population already living in urban areas (ESCAP, 2019b). Even prior to the pandemic, cities had failed to keep pace with continued and often unplanned urbanization. This has led to long-standing challenges, such as urban poverty, multidimensional inequalities and environmental degradation.

Urbanization trends and drivers

Urban transformation in Asia and the Pacific over the past few decades has occurred at an unprecedented rate (ESCAP, 2019b). Even though the region's urbanization rate has slowed, urban growth is projected to continue for decades. The population of people living in urban areas in the region is projected to increase from approximately 2.48 in 2023 to 3.38 billion in 2050, resulting in an additional 970 million urban residents over the same period.[1]

The population of people living in urban areas in the region is projected to increase from approximately 2.48 billion in 2023 to 3.38 billion in 2050, resulting in an additional 970 million urban residents over the same period.[1]

This trend in urban growth is occurring while cities across the region are at very different stages of development. Some cities in Asia and the Pacific, such as Bangkok, have already undergone significant growth; others, such as Vientiane, are only at the beginning of this transformation.

In fact, many of the countries with the lowest levels of urbanization in the region are changing at the most rapid rate. Nearly two thirds (63.1 per cent) (World Bank, 2021) of the population of the Lao People's Democratic Republic live in rural areas. The country has been facing significant urbanization since 2010, climbing to a rate of up to 4.9 per cent, which is higher than the global average of 2 per cent (UN-Habitat, n.d.).[2] This puts a great amount of pressure on urban and emerging urban settlements. South Asia, the least urbanized region of Asia, also is projected to experience intense growth in the coming decades. Its urban population exceeds 743 million and is estimated to reach approximately 1.28 billion by 2050 (United Nations Department of Economic and Social Affairs, 2018).

Urbanization across Asia and the Pacific is driven by a variety of forces. A primary factor for urban population growth is the natural population increase from new generations of city-born urban dwellers. Regionally, some of the largest cities were seeing a decline in net migration in 2021 compared to the rising urban-born population growth. (IOM, 2021). Another important contributing factor is administrative reclassification, as urban boundaries expand or rural settlements urbanize through development and population growth. Both internal and cross-border migration are also important contributors to urbanization in many countries, as millions of people move from rural areas or other countries to towns and cities in search of employment, education and other opportunities. As reported by World Bank (2022), the proportion of the rural population in India decreased significantly from 82 per cent in 1960 to 65 per cent in 2021, complemented by a concomitant increase in the urban population from 17.9 per cent in 1960 to 35 per cent in 2021.

[1] ESCAP Calculation based on United Nations Department of Economic and Social Affairs (2018b).
[2] According to estimates based on United Nations Department of Economic and Social Affairs (2018b), urbanization annual growth rate has fluctuated between 3.2 and 3.5 per cent.

In addition, some urban communities in the region have been forcibly created as a result of displacement. The number of urban refugees in Asia and the Pacific either displaced by political events, such as ethnic conflict, or by the consequences of the climate crisis and geophysical disasters, totaled 2.8 million in 2019 (IOM, 2021), which was in addition to another 6.2 million up to mid-2022, who were internally displaced (UNHCR, 2022). Typically, those uprooted move to cities. Some 80 per cent, or 2.8 million people classified as people forcibly displaced by the United Nations High Commissioner for Refugees (UNHCR), which includes refugees and internally displaced people (IDPs), are settled in urban and peri-urban areas. This figure, for example, was 97 per cent in Afghanistan by 2020 (IOM, 2020; UNHCR, 2018).

Continued urban growth is transforming traditional social structures. For example, urbanization has been linked to changes in established cultural and social norms, such as increased female participation in the labour force, lower fertility rates and ageing societies (Trask, 2022). Nevertheless, while greater economic and social freedoms are often possible in cities for marginalized groups, such as women, persons with disabilities and older persons, the trade-offs for many have increased inequality, uncertainty and marginalization. Urban migration can lead to fragmentation in family structures, declines in fertility and shifting norms. While some cities are addressing an ageing population, others are experiencing a "youth bulge" or a combination of both – a phenomenon that, while potentially offering benefits, such as a digital savvy workforce, also brings accompanying challenges of employment, development and security.

The region's accelerating economic growth as part of the COVID-19 recovery is also altering the nature and structure of its cities. Urban centres continue to be rapidly reconfigured by globalization, information technologies and other powerful forces of change. New and unprecedented urban forms have emerged. Cities, such as Shanghai and Karachi, for example, have expanded into metropolitan areas encompassing tens of millions of urban residents. By 2025, two thirds of the world's 49 megacities will be in the Asia-Pacific region (Global Data, 2019).

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These immense agglomerations may even coalesce into "mega-urban regions" that are closer to countries in scale and economic significance. The size and variety of these extended urban areas demand new approaches to urban governance from local municipal authorities to metropolitan frameworks spanning a range of different structures.

Though megacities often dominate policy and media discussions, they account for less than 20 per cent of the total urban population in the region.[3] Approximately 45 per cent of the urban population in Asia is in urban areas with populations of 500,000 or less (United Nations Department of Economic and Social Affairs, 2018).

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These secondary cities, which often attract less attention in policy and public discussions, are frequently where the challenges of urbanization and inequality are most acute, as local authorities lack the capacity or resources to respond to the challenges of rapid urbanization. This highlights the importance of channeling more support and investment into smaller urban settlements across the region.

Much of the current urban growth is occurring in the outskirts of cities. In Honiara, the growth has reached more than 15 per cent in some peri-urban areas and, within the city, the growth is characterized by the spread of informal settlements in areas vulnerable to flooding and landslides (United Nations, 2017). This continues to result in the creation of peripheral "desakota areas", which are characterized by urban sprawl. These settlements face particular development challenges, as many of them lack the resources, infrastructure or even governance due to the lack of administrative recognition to be effectively managed.

[3] ESCAP calculations based on the current population (2023) of 29 Asia-Pacific megacities as classified by UNESCO / estimated total urban population (2023) in Asia-Pacific x 100 = 17,52%. Sources: The United Nations Educational, Economic and Scientific Organization (UNESCO) definition of megacity is available at https://en.unesco.org/events/eau-mega2021/megacities (accessed on 31 May 2023) and United Nations Department of Economic and Social Affairs (2022).

In this century, the development focus of the region will shift decisively to cities. As many countries in Asia and the Pacific graduate to middle-income country status, their needs are changing from traditional areas of development to more diversified sectors, including services, technology and innovation. Demand for technical assistance and support in urban management is likely to increase, presenting an important entry point for international agencies to support development across the region. Urbanization need not be a "problem", if soundly managed.

To a large extent, the distinction between positive and negative urban characteristics – social inclusion or segregation, density or overcrowding, livelihood creation or joblessness – ultimately depends on how a city is managed. Urbanization can boost prosperity, participation and service access, but it can also lead to the formation of slums, inequality and disenfranchisement. For cities to realize their full potential, the value of "localizing" the implementation of the Sustainable Development Goals is especially important in the context of cities.

Box 0.1 "Urban" – the problem of definitions

One challenge in defining urban areas is the lack of consensus on the definition of "urban". The classifications vary from country to country. The Asia-Pacific region has an extraordinarily diverse number of urban forms, ranging from megacities to peripheral settlements. In this context, defining what constitutes "urban" is difficult as the breadth of scale blurs the boundaries between city and countryside – making the traditional distinction less meaningful. A settlement of 10,000 people, for example, may be classified as being urban even though it may have more in common with its rural surroundings than a megacity of millions.

The twin challenges of diversity of urban definitions at the national level and the lack of a clear line between urban and rural communities prompted the international community to develop a globally harmonized method to define urban and rural areas. Through this commitment, which was led by UN-Habitat, the European Commission, the Food and Agriculture Organization of the United Nations (FAO), the Organisation for Economic Co-operation and Development (OECD) and the World Bank, and through extensive consultations with countries, a globally harmonized method to define urban and rural areas was officially adopted by the United Nations Statistical Commission in 2020. The method, titled the degree of urbanization (DEGURBA) (European Union and others, 2021), establishes similar thresholds and an easy to implement workflow for defining settlements, and identifies a system of settlements along the urban-rural continuum, solving the long-standing challenge of binary urban-rural classifications that distort urbanization trends across countries. The degree of urbanization classifies the entire territory of a country along the urban-rural continuum. It combines population size and population density thresholds to capture the full settlement hierarchy (European Commission, 2020).

More than 50 countries have directly applied the method, including countries from the Asia-Pacific region. They value this approach to improve their understanding of urbanization processes and the production of comparable data within and across territories. While the method aims to enhance data comparability, it should be noted that it is meant to complement and not replace the already existing definitions used by national statistical offices and ministries.

The response of the Asia-Pacific region to urbanization is still evolving within the context of a post-pandemic recovery. Some countries have historically discouraged the growth of their towns and cities through "ruralization" programmes or restrictive registration systems. The COVID-19 pandemic has resulted in a decline in the use and economic value of urban central business districts due to hybrid and remote work transitions.

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In general, however, authorities are still struggling to keep pace with urban growth, while state and agency programmes remain focused on rural areas without acknowledging their deepening connection with cities. The increasing closeness between rural and urban areas in the Asia-Pacific region is a complex and ongoing process. It can lead to positive outcomes, such as improved living standards and economic opportunities and challenges, including the potential loss of traditional cultural practices and environmental concerns. Balancing these changes is essential to ensure sustainable and inclusive development in the region.

The urban areas of the Asia-Pacific region require innovative and collaborative systems of governance. For cities to function, central governments, local authorities, communities, civil society organizations and businesses must actively participate in governance structures and decision-making mechanisms. Developing the knowledge and frameworks for successful multi-stakeholder collaborations – for example, with private sector actors – remains a challenge for many urban areas. Lack of effective governance systems can lead to service gaps, shortfalls and inequity, while well-designed and regulated systems have the potential to substantially benefit service delivery and other basic functions.

Creating virtual and in-person platforms to promote genuine participation and accountability is vital to ensure meaningful contributions from individuals and civil society organizations to these processes. Considerations should be made to engage underrepresented communities and marginalized groups, and a bottom-up approach should be taken to promote urban governance and policy development. This should include integrating civic participation and ensuring fair and transparent decision making processes into the planning and management of cities as an essential step towards realizing what the New Urban Agenda refers to as the "right to the city".

Well-managed decentralization can provide the basis for more adaptive and resilient crisis governance for cities provided there are sufficient resources and capacity.

Well-managed decentralization can provide the basis for more adaptive and resilient crisis governance for cities provided there are sufficient resources and capacity. With a well-established legal, institutional and financial framework to support municipal capacity, together with sufficient political will and accountability, localized governance structures can facilitate more inclusive and effective processes to manage responses to global crises (Fischer, 2021). However, while urban areas can be well suited to political decentralization, in practice, many cities suffer from weak and fragmented governance implementation systems. In many instances, the transfer of responsibility has placed greater pressure on already strained resources, which declined during the pandemic. This is especially the case when the duties of government have been devolved to municipal authorities without the necessary financial or human resources and capacities to carry out these duties effectively. This can lead to a deterioration of infrastructure and services, which disproportionately affects vulnerable groups.

To be effective, political decentralization must also be accompanied by an appropriate level of fiscal and budgetary transfers to ensure that local authorities have the capacity to meet their responsibilities. This should include devolution of key functions, such as local fiscal management, with the provision of capacity development. Processes to ensure monitoring and transparency are needed to keep local authorities accountable. Cities should, therefore, enjoy significant autonomy within a broader framework that ensures their continued commitment to their constituency, including the poorest and most vulnerable members.

Poverty, informality and inequalities in the region's cities

Globally, including the Asia-Pacific region, the pandemic pushed approximately 100 million more people into extreme poverty (Gopalakrishnan and others, 2021). The poorest 20 per cent of society experienced the steepest decline in incomes during the pandemic, and the poorest 40 per cent have not yet recovered the income lost due to COVID-19 (Gopalakrishnan and others, 2021).

More than 65 per cent of employment in Asia-Pacific cities is in the informal economy, which has been disproportionately affected by the pandemic and is slower to rebound.

More than 65 per cent of employment in Asia-Pacific cities is in the informal economy, which has been disproportionately affected by the pandemic and is slower to rebound. (ADB, 2022). Two of the largest employment sectors, wholesale trade and retail trade, and the food and accommodation (a proxy for tourism) sectors, which together employed more than 350 million workers in Asia and the Pacific in 2019 (ILO, 2022), have a large share of informal workers in their workforce. These sectors also accounted for a much larger share of job losses; women, young people and informal workers were particularly hard hit by job losses as they accounted for more than 50 per cent of the tourism-related workforce and approximately 40 per cent of wholesale and retail trade (ILO, 2022). With international travel not expected to reach pre-pandemic levels before 2024, the losses in jobs – especially in the food and accommodation sectors – may not recover until 2024 (ILO, 2022).

Box 0.2. Pandemic warriors: empowered women leading Asia-Pacific cities through COVID-19 challenges

During the COVID-19 pandemic, women in Asia-Pacific cities have played a crucial role in various aspects, showcasing their resilience and determination. According to a report by UN Women Asia-Pacific, women constitute the majority of frontline health-care workers, accounting for 70 per cent of the health-care workforce in the region (UN-Women, 2021). Furthermore, a study conducted by the Asian Development Bank (ADB) indicated that women-led small and medium enterprises faced unique challenges during the pandemic. The study revealed that 58 per cent of women-owned businesses reported a decline in sales, compared to 47 per cent of male-owned businesses (ADB, 2021b). Additionally, the International Labour Organization (ILO) reported that women in the Asia-Pacific region experienced a disproportionate burden of unpaid care work, spending approximately 4.7 hours per day on caregiving activities, compared to 1.7 hours for men (ILO, 2021). These statistics highlight the significant contributions of women, the obstacles they faced, and the need for gender-responsive policies and support systems to address the gendered impacts of the pandemic in the region.

Social and economic protection policies to support the urban labour force affected by the pandemic have not adequately considered informality. Workers, especially in the informal economy, have not only experienced income loss, but they have also faced marginalization as they were not registered for social protection programmes. Consequently, these workers were not immediately eligible for government assistance. Major structural shifts are evident through changes. The casualization of the labour market as well as growth of the gig economy and remote work, for example, could increase informality in the workplace.

The rising cost of living and interest rates are contributing to the problem of unaffordable housing in urban centres, which prices out the poor and increasingly the middle class. Insecure land tenure and the resulting threat of eviction is a primary cause of urban vulnerability, particularly in slums and informal settlements. Land governance remains a challenge for some urban areas, particularly where formal and non-formal tenure systems come into conflict. In many Pacific cities, inefficient administration and competing claims of public, private and customary land tenure systems have halted development and perpetuated the growth of informal housing to fill the gap. In addition to placing the urban poor at constant risk of eviction, this restricts them from using their property as collateral to secure credit for business or educational purposes. As land prices continue to rise due to development projects and investment speculation, the poor are increasingly driven out of the cities.

Insecure land tenure and the resulting threat of eviction is a primary cause of urban vulnerability, particularly in slums and informal settlements.

© David Davis - People living in poverty along the canals of Manila Philippines

Urban infrastructure and services

As urban populations increase, the need for well-managed public services and infrastructure continues to grow.

As urban populations increase, the need for well-managed public services and infrastructure continues to grow. Cities must address these needs by tackling a host of challenges, including, among them, environmental crises and financial pressures faced during COVID-19 and the subsequent recovery. As one example of addressing these challenges, Thai cities and their central government agencies are actively seeking innovative financing solutions for urban infrastructure. Most of the 4.6 billion Thai baht (B) (approximately $130,600,000) budget allocated for developing cities goes mostly to Bangkok and its neighbouring regions (World Bank, 2023). Distributing these funds more evenly to foster the growth of secondary cities could contribute to the nation's overall gross domestic product (GDP) and promote more balanced and inclusive development across the country. For instance, Khon Kaen, one of Thailand's most rapidly expanding cities, has a 20-year strategy plan with 136 projects in place; one of them is the Light Rail Transit (LRT) project, which is actively supported through funding and enabling policies by the Government (World Bank, 2023). On the other hand, another city in Thailand, Nakhon Sawan, was able to mobilize close to B 8 billion from public-private partnerships for urban infrastructure development after the city updated its zoning plans and reset the permissible height of buildings (World Bank, 2023). The experiences of these two cities underscore the need for a supportive and enabling environment and partnerships at national and local levels. Central governments must recognize the significance of urban development and provide adequate resources and support to cities, such as Khon Kaen, to enable them to implement their strategic plans and enhance the overall well-being of their citizens. Concurrently, local governments should proactively seek alternative avenues, such as revising city zoning regulations and public-private partnerships, to overcome financial constraints and drive urban development projects forward.

Digital divides and inequalities

Technological innovation and digital transformations create opportunities to connect people to goods, services and each other in new ways as governments and the private sector increasingly deliver services online. The COVID-19 pandemic has proven that digital connectivity is no longer a luxury, instead, it is a cornerstone for resilient communities and a social determinant of health. This is demonstrated through advancements in telemedicine for populations in underserved areas, health information access and education, including for communities living in informal settlements. Patients can consult with doctors and health-care providers via video calls, phone calls or chat lines, eliminating the need for in-person visits. Digital connectivity supports public health initiatives by enabling authorities to disseminate important health alerts, conduct health surveys and track the spread of diseases more efficiently. Online resources, articles and videos help individuals make informed decisions about their health and well-being.

At the same time, it is important to note that while digital connectivity offers numerous benefits to health, it also brings challenges related to privacy, security and equitable access. Increasing connectivity can also introduce new vulnerabilities to marginalized groups and exacerbate well-entrenched challenges. Benefits from urban digital transformation are not spread equally. For instance, globally, 27 per cent of older persons in urban areas lack Internet connectivity (Emily Royall and others, 2021a). According to the International Telecommunications Union (ITU), 768 million children and young people 25 years or younger in South Asia lack Internet access (Emily Royall and others, 2021b). This should be carefully considered when developing solutions to bridge the so-called "digital divide".

Urban food insecurities

Global supply chain disruptions stemming from the pandemic and the crisis in Ukraine have had a devastating impact on food security in the Asia-Pacific region. Ukraine and the Russian Federation together supply almost 24 per cent of globally traded wheat and almost 13 per cent of globally traded maize (WFP, 2022). In addition, the Russian Federation is a major supplier of fertilizers, oil and gas. Sanctions and export restrictions have affected the global supply chain, increased fuel prices and hindered countries' ability to grow food, which will increase food insecurity far beyond 2022 (WFP, 2022). India, which accounts for more than 35 per cent of global rice exports, banned the export of broken rice and increased export taxes on other types of rice in early September 2022 (Jacob, 2022). This could further increase food prices. As of August 2022, the FAO Food Price Index remained at 10.1 points (or 7.9 per cent) above its value a year ago in 2021 (FAO, 2023).

While disaggregated data on food insecurity in rural and urban areas are not readily available, the scale of food insecurity in the region is acutely felt in urban areas. Estimates indicate that more than 1.1 billion people did not have an adequate diet in 2020 (FAO and UNICEF, 2021). An estimated 375.8 million people faced hunger in the region during the pandemic, which is 54 million more people than in 2019 (FAO and UNICEF, 2021). The pandemic led poor urban households to reduce their food basket and meal frequency due to loss of income and rising food prices resulting from supply chain disruptions (Ohly and others, 2021).

The pandemic led poor urban households to reduce their food basket and meal frequency due to loss of income and rising food prices resulting from supply chain disruptions.

In the Asia-Pacific region, 1.8 billion people (FAO and UNICEF, 2021) cannot afford a healthy diet, which according to the World Health Organization (WHO) helps protect against malnutrition in all its forms and noncommunicable diseases (WHO, 2020). Because different parts of the economy are recovering at different paces, lower-income and poor households could face persistent food insecurity and malnutrition.

Cities and the planetary crisis

Though cities are often associated with negative environmental impacts, well-managed urban areas can benefit the planet. Among other potentially positive outcomes, cities and towns can promote more compact land use and deliver better access to essential services, such as sanitation, waste management and public transport. They can also provide the necessary scale for energy-efficient services and infrastructure, resulting in lower per capita emissions. Urban areas are ideally suited for financing and implementing green technologies that can lower per capita fossil fuel consumption (UN-Habitat, 2022).

Rising sea levels, coastal erosion, heatwaves, bushfires and the increased intensity of precipitation and storms are expected in the coming years (IPCC, 2021). The relative sea level in the region has increased more rapidly than the global average and countries are experiencing coastal area loss and shoreline retreat (IPCC, 2021). This increases cities' vulnerability to storm surges, coastal inundation and saltwater intrusion into aquifers, leading to loss of life and biodiversity, billions of dollars of losses and damage to infrastructure. As informal settlements are often in areas that are flood prone, poorer sections of the population are more vulnerable to the effects of rising sea levels. Exclusionary urban planning and limited investment in infrastructure development increase cities' risks of losses from extreme weather events.

Rapid economic growth and urbanization has resulted in an increase in demand for energy in the region. The current energy crisis has heightened existing issues, such as the high dependency on fossil fuels and an uneven power distribution network in the Asia-Pacific region, particularly in informal settlements. Disruption in fuel supply chains and growing energy demands has led to record prices for natural gas, coal and oil, prompting many Asia-Pacific countries to regulate prices and reduce non-essential energy consumption (Yep, 2022).[4] Higher energy prices push countries into debt-distress and further burden urban households affected by loss of income and food insecurities. Protests against rising and volatile energy costs are occurring in cities, which are prolonging economic recovery. The energy crisis has exacerbated existing recovery challenges in cities. These include ensuring energy access for all, particularly power reliability and clean cooking in informal settlements and limited uptake of renewable energy technologies and efficiency improvements in key urban sectors, such as transport.

Cities, as engines of the economy, account for approximately 70 per cent of energy-related emissions (IPCC, 2022). According to the Paris Agreement, if immediate measures are not taken to limit the increase of the global temperature to 1.5°C above pre-industrial levels, greater impacts, such as food insecurity, inequality and income loss due to adverse weather events, can become more intense in many vulnerable cities.

As economies and urban areas continue to expand, it is expected that their emissions will continue to rise. Short-lived climate pollutants (SLCPs) consisting of black carbon, methane, ground-level ozone and hydrofluorocarbons (HFCs) are the largest contributors to the anthropogenic global greenhouse effect after carbon dioxide, responsible for up to 50 per cent of climate change. Due to their short atmospheric lifetime, SLCPs also have greater potential to boost global warming and pose significant adverse effects on health and the environment. In fact, many sources of air pollutants are also sources of greenhouse gases, making clean air actions critical (RIFS Potsdam, 2023).

To mitigate the impact of climate change, cities must invest in low emission and climate-resilient development supported by policies and strategies, capacity building and technical support. Low-elevation coastal zones need to take measures to minimize the impact of rising sea levels, saltwater intrusion into aquifers and shoreline retreat.

[4] See also https://www.spglobal.com/commodityinsights/PlattsContent/_assets/_images/latest-news/062722-infographic-asia-pacific-economies-ballooning-energy-crisis-oil-gas-lng-coal-electricity.jpg

© jakartatravel - City contrast in Jakarta, Indonesia capital city

COVID-19 exposes unequal urban health systems

The combination of food insecurities, climate change and pollution increases the risk of communicable and noncommunicable diseases for urban populations. Urban health systems in the Asia-Pacific region have not kept pace with continued urbanization, particularly in providing services in informal settlements. The COVID-19 pandemic has shown that underlying issues of inequality and exclusion, along with overcrowding, and inadequate access to housing and basic services in cities, were a factor in the higher transmission and more rapid spread of COVID-19 (UN-Habitat, 2021). Wealthier neighbourhoods often have better-equipped hospitals and medical facilities, while lower-income communities face limited access to health-care services. The pandemic has intensified the consequences of this disparity, as individuals in underserved areas more often struggle to find a nearby health-care centre, leading to delayed or inadequate treatment for COVID-19 and other health conditions. Factors, such as overcrowded living conditions, limited access to personal protective equipment (PPE) and difficulty in maintaining social distancing, contribute to the disproportionate impact on vulnerable urban communities. Moreover, individuals in low-income areas may have jobs that do not allow remote work, making them more vulnerable to exposure. The distribution of COVID-19 vaccines often focused on urban centres with better infrastructure. As a result, slums were overlooked in the initial phases of vaccine distribution, leading to delays in reaching vulnerable populations (Acharya, Ghimire and Subramanya, 2021).

Accordingly, improving accessibility to health care is critical for tackling future pandemics and disease outbreaks. In addition, engaging and working collaboratively with local communities have produced better health outcomes during the pandemic. Investing in community partnerships, along with measures to collect disaggregated data and improving access to the Internet, would help respond to future health shocks in cities.

The importance of sustained urban progress in challenging times

During and after the COVID-19 pandemic, cities in the Asia-Pacific region demonstrated remarkable regional collaboration and support for one another, indicating the importance of collective action to mitigate the impacts of the crisis. Through various regional cooperation initiatives, cities shared knowledge, resources and best practices to tackle the challenges posed by the pandemic. For instance, Singapore extended its expertise in contact tracing and health-care management to the cities of Seoul and Tokyo, among others, helping them develop robust systems for controlling the spread of the virus. Furthermore, cities, such as Shanghai and Hong Kong, China, collaborated on sharing data and experiences related to public health measures, enabling timely and effective decision-making. Cities, such as Suva, Pune, Hoi An and Subang Jaya, organized virtual forums with ESCAP in which they shared strategies on managing public health crises and the socioeconomic recovery, ensuring access to essential services, and implementing social safety nets for vulnerable populations.[5] In addition to the exchange of information, cities in the region also provided aid and support to each other. Sydney and Melbourne, for example, sent medical supplies and equipment to cities in India during the devastating second wave of COVID-19, showing solidarity and compassion in times of crisis. These collaborative efforts showcased the resilience and unity of cities in the Asia-Pacific region, setting a precedent for future challenges that may arise.

The sustainable recovery of the Asia and Pacific region will be largely determined by its urban areas – their strengths and their shortcomings. Urbanization is a positive and inevitable process in a country's development that cannot be ignored or forcibly constrained. It can, however, be guided towards more inclusive and sustainable outcomes.

Despite challenges, sustainable urban planning that addresses climate change, and leverages digitalization and finance still represent an extraordinary opportunity for countries to lift themselves out of crises. Drawing upon consultations on the status of Sustainable Development Goal 11 on sustainable cities and communities in the region, in the present report, the linkages between urban planning, climate action, digitalization and finance in urban areas of Asia and the Pacific are explored. The report concludes with actions for policymakers to guide urban cooperation and partnerships to address severe disruptions and long-standing development challenges in cities for a sustainable urban recovery in Asia and the Pacific.

[5] For further information on this project, please visit https://www.unescap.org/our-work/environment-development/cities-for-a-sustainable-future/resilient-inclusive-cities and https://urbaneconomicresilience.org/.

01

Chapter 01

Urban and territorial planning for a resilient future

Asian-Pacific cities are diverse, complex and dynamic systems that are continuously evolving and growing.

These cities will house approximately 3.38 billion people, representing the majority of the world's urban population by 2050.[6] Urbanization rates and level of urbanization vary by subregion and country. Countries, such as the Lao People's Democratic Republic and Maldives, are recording some of the highest urban growth rates in the region and lowest levels of urbanization, at 33 per cent and 41 per cent, respectively (Lang-at Junior, 2018). On the other hand, countries, such as Japan and the Republic of Korea, are experiencing a slowdown in the growth of their urban populations. The United Nations Department of Economic and Social Affairs estimates a decline in the urban population of Japan (absolute numbers), with marginal growth of the proportion of the urban population (United Nations Department of Economic and Social Affairs, 2018a). It also estimates that the urban population (absolute numbers) of the Republic of Korea is increasing, but at a low rate, with population loss even occurring in some cities. The factors influencing these trends in Japan and the Republic of Korea can be attributed to declining birth rates, ageing populations and the countries' already high level of urbanization, at 90 per cent in Japan and at 80 per cent in the Republic of Korea (United Nations Department of Economic and Social Affairs, 2018b).

Urbanization and population trends, regardless of their trajectories, are critical factors for urban and territorial planning.

Urbanization and population trends, regardless of their trajectories, are critical factors for urban and territorial planning. However, when urbanization occurs in an unplanned manner, particularly in countries where the rate is increasing rapidly, it poses substantial problems for urban planning, management and environmental sustainability, and places immense pressure on local governments already grappling with limited resources and capacity to meet the escalating demand for urban services. The convergence of multiple crises further exacerbates these challenges, intensifying the strain on urban systems, amplifying social inequality, and increasing vulnerability to climate change and demand for vital resources, such as water.

[6] ESCAP calculation based on United Nations Department of Economic and Social Affairs (2018b).

Urbanization trajectories and leaving no one behind

Urban and territorial planning can play a significant role in not only shaping the future of cities in the Asia-Pacific region, but also in improving quality of life and reducing inequality. Prioritizing equitable distribution and utilizing universal design principles ensures barrier-free access to services that consider the specific needs of marginalized and vulnerable population groups, including the elderly, women, people with disabilities and young people. According to ESCAP, as of 2016, a total of 717 million young women and men aged 15 to 24 live in the Asian and Pacific region, accounting for more than 60 per cent of the world's young people. Projections also indicate that the proportion of elderly is expected to increase to 16 per cent of the population of Asia by 2040 (Jong-Wha, 2018). Gender disparities are more acute in the urban areas. Women, especially those from marginalized communities, encounter barriers when trying to access basic services, such as water, sanitation, housing, transport, education and health care, as distance, affordability, safety and cultural norms, for example, present obstacles that prevent them from fully participating in urban life and accessing essential amenities.

Informal settlements and slums are where the most marginalized and vulnerable people live in cities in the region. As of 2018, Asia and the Pacific had the largest number of people living in informal settlements (approximately 650 million).

Informal settlements and slums are where the most marginalized and vulnerable people live in cities in the region. As of 2018, Asia and the Pacific had the largest number of people living in informal settlements (approximately 650 million) (United Nations Department of Economic and Social Affairs, 2018a). These settlements often lack access to clean water, sanitation facilities and reliable electricity, and are the most vulnerable to the impacts of multiple crises. Women and girls mostly bear the responsibility of collecting water, managing household chores and ensuring family hygiene in these challenging environments, further burdening their health and well-being.

© Alexey Stiop - House in Tajik village

Box 1.1. Urban planning and housing for all

Urban and territorial planning can facilitate access to basic services and the upgrading of informal settlements, create affordable housing and improve the resilience of cities. Infilling and inclusionary zoning regulations can require developers to include a certain percentage of affordable housing units in their projects, incentivize preserving and upgrading existing affordable housing, and promote higher-density mixed-use developments that can increase housing supply and make housing more affordable in cities. Special consideration must be extended to women in low-income households, as they tend to face difficulty in accessing affordable housing due to income inequalities and systemic barriers. Single mothers often face additional vulnerabilities and struggle to find affordable housing that meets their needs, particularly if they are also responsible for childcare and other types of caregiving. Overall, addressing the affordable housing challenge in cities provides the opportunity to transform the quality of life, improve resilience and sustainability, and catalyse economic development that leaves no one behind. There have been some significant policy interventions in the region to address the housing crisis, such as in the Philippines and India.

In 2022, the Government of the Philippines launched a flagship programme, the Pambansang Pabahay para sa Pilipino (4PH) (Regani, 2023), which aims to address the country's 6.5 million housing shortage by building 1 million units annually until 2028 (PNA, 2023). This multi-stakeholder programme, which engages local governments, the private sector and communities, intends to transform informal settlements into prime mixed-use residential sites and waterfronts. Features of the programme include in-city resettlement, high-density housing in highly urbanized areas and use of idle government land.

The Government of India is addressing the affordable housing shortage through the Pradhan Mantri Awas Yojana (PMAY), a mission with a target to build 20 million homes to benefit slum dwellers and low-income group initially by 2022 (extended to 2024) (Bai, 2022). Funding constraints, delays with project approvals, land availability and acquisition, quality of construction, limited awareness and outreach, resettlement and rehabilitation issues, inadequate infrastructure, and establishing robust monitoring and evaluation mechanisms affected the success and demonstrated the complexity of delivering adequate and affordable housing. To date, 7.5 million houses have been completed under the project (India, Ministry of Housing and Urban Affairs, n.d.).

Minimizing sprawl and maximizing resilience

Urbanization patterns in the Asia-Pacific region exhibit spatial variations. Megacities, such as Bangkok, Seoul, Mumbai, Delhi, Jakarta, Shanghai and Manila, are experiencing continued growth. For example, the population of Bangkok increased from 9.4 million in 2015 to 10.7 million in 2021, a 12 per cent increase in just six years (United Nations Department of Economic and Social Affairs, 2022). Additionally, the populations of secondary cities, especially those along the coast, are also growing at an extremely high rate. Compared with many other parts of the world, the Asia-Pacific region has a disproportionately high number of large cities on the coast (Nunn, Smith and Eldrick-Barr, 2021), leading to growing concerns of the escalating risks of rising sea levels and flooding due to climate change.

Compared with many other parts of the world, the Asia-Pacific region has a disproportionately high number of large cities on the coast, leading to growing concerns of the escalating risks of rising sea levels and flooding due to climate change.

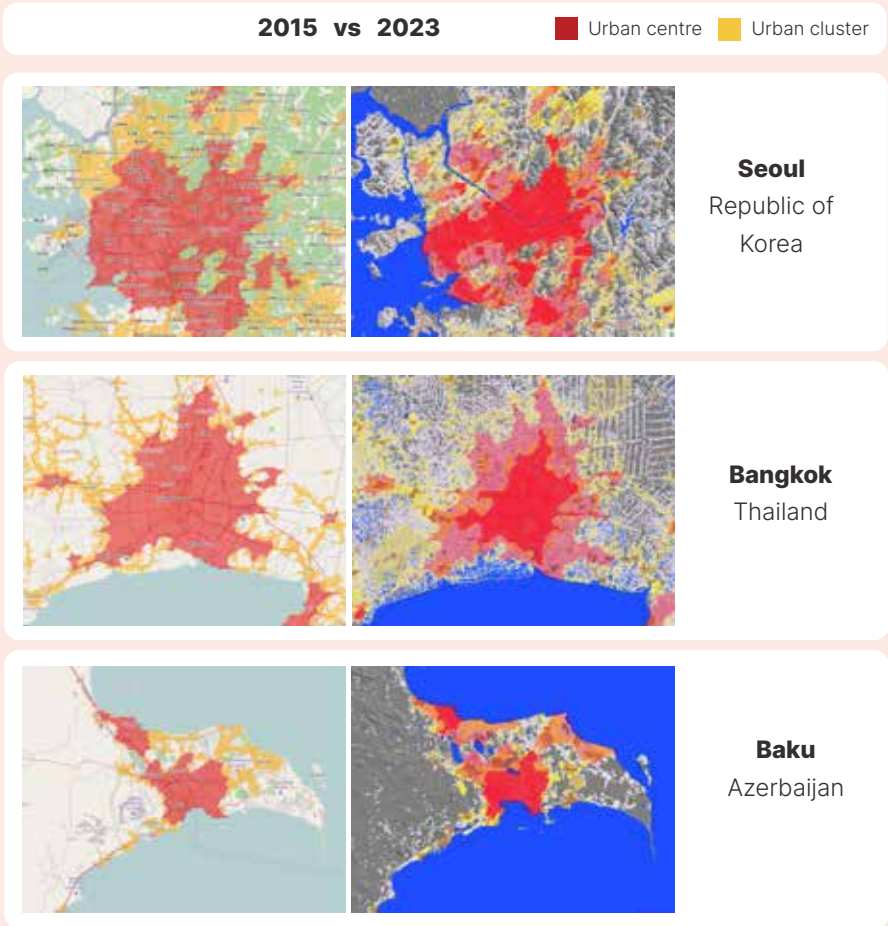
Sprawling cities are a key factor behind the sustainability crisis. Sprawl reduces the affordability, livability and sustainability of a city. Unfortunately, as the region's cities expand economically, they are increasingly sprawling. Figure 1.1 depicts the degree of urbanization for several cities in the Asia-Pacific region, comparing data from 2015 to 2023. The visuals show the vertical growth of the urban cores of megacities, such as Bangkok and Seoul, along with the expansion of the boundaries of cities due to sprawl. Such sprawl has increased the costs of municipal infrastructure development and operating costs by approximately 20-35 per cent (Gielen and others, 2021). Projections indicate that South-East Asia is poised to double its urban land between 2010 and 2050 (Baker, Ellis and Roberts, 2016). This expansion necessitates strategic investments in infrastructure, including transport, energy systems, water and sanitation, and housing, and climate-proofing measures for coastal cities. To address these demands, comprehensive urban planning, land-management strategies and climate action, supported by appropriate social and economic policies, and bolstered by enhanced local government capacity and resources are required.

Figure 1.1. Urban concentration in capital cities

Source: European Commission (2023).

Note: Capital cities of several Asia-Pacific countries between 2015 and 2023 experienced an increase in urban centres density as indicated by the colour red in the map to showcase their degree of urbanization,[7] which could also showcase the vertical growth in cities.

[7] Urban centre (in red) defines a city: An urban centre consists of contiguous grid cells of 1 sq km with a density of at least 1 500 inhabitants per sq km and a minimum total population of 50 000. For more information see http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Urban_centre.



Making cities more resilient

The form and function of cities are affected by a variety of aspects, which are explained in box 1.1. These dynamic interconnected elements need to be factored into efforts to develop proactive policy and planning solutions that foster sustainability and resilience. Frameworks, such as the UN-Habitat International Guidelines on Urban and Territorial Planning, provide guidance and principles for making cities and territories more compact, socially inclusive, better integrated and interconnected, which ultimately foster sustainable urban development and build resilience to climate change (UN-Habitat, 2015).

Box 1.2. Defining city systems

A city system refers to the complex and interconnected network of social, economic, environmental and spatial components within cities and urban areas, constituting dynamic relationships and connections between various elements that contribute to the form, functionality, livability, resilience and sustainability of a city. These components broadly include population, infrastructure, built environment, economy, governance, social systems, environment, technology, mobility and transport, and resilience:

- A city's population is dynamic and constantly changing, constituting a diverse mixture of ages, cultures and labour.
- The physical *infrastructure* is the skeletal system of a city supporting its operations and the daily lives of urban residents through the provision of transit systems, communication systems, public utilities and amenities.
- The *built environment*, defined by its architecture, buildings, various scales and green and public spaces, shapes the form, functionality and livability of the urban landscape.
- *Economic activities* across formal and informal sectors drive a city's financial growth and provide employment opportunities. The growth and sustainability of the economy of cities are directly affected by their population dynamics.
- Cities are *governed* by institutions, policies and regulations, consisting of local government bodies, administrative frameworks and legal systems. Good governance ensures that cities are well-managed and that public services are provided in an equitable, efficient and affordable manner.
- The *social fabric* of cities includes cultural aspects and social networks, which reflect the diversity, richness and uniqueness of urban life.
- The management and protection of *natural resources and environment* within and around a city affects factors, such as air quality, water resources, green spaces and biodiversity, which, in turn, affects its resilience, sustainability and livability.
- The use of inclusive and innovative *digital solutions* and infrastructure enhances the efficiency and connectivity of a city through the deployment of smart-city *technologies*, data analytics, internet connectivity and digital platforms.
- The integrated *transport modes and networks* within cities provide for mobility and connection through road and rail networks, public transport, cycling and pedestrian walkways.
- The *resilience* of cities and their ability to adapt, respond, and recover from shocks and stressors, disasters and environmental challenges requires strategies targeting climate change mitigation, disaster preparedness, energy efficiency, waste management and urban planning that cut across and need to be factored into the physical infrastructure, built environment, governance, technological solutions and environmental management of cities.

These components interact and influence each other within the city ecosystem. They form a complex web of interdependencies and interactions that need to be factored into urban territorial planning and policies. Understanding and managing these interactions are crucial for sustainable urban development and to improve the quality of life, resilience and sustainability of cities.

Economic activities play an important role in driving the sustainability of cities. Asia and the Pacific is home to some of the world's fastest-growing economies, including China, India and several South-East Asian countries. Amid the backdrop of the multiple crises, the significance of cities and local economic development has become more pronounced, as they make substantial contributions to national and regional GDP by functioning as catalysts for economic recovery, stimulating overall economic growth and infusing innovation into various sectors. Planners must consider economic factors relating to land-use decisions, infrastructure planning, housing revitalization efforts and sustainability goals to create economically vibrant and sustainable urban environments. Additionally, urban planning can support women's economic empowerment by fostering well-designed mixed-use neighbourhoods, enhancing access to job opportunities and providing equitable access to supportive infrastructure, including childcare services. In the Asia-Pacific region, more than 65 per cent of the population is employed in the informal sector (ILO, 2018). This varies across the region from below 20 per cent in Japan to approximately 90 per cent and above in Bangladesh, Cambodia, India, the Lao People's Democratic Republic and Nepal (ILO, 2018). Governments and planners in the region are increasingly recognizing the importance of supporting the informal sector due to its significant contributions to the urban landscape and national economies. Urban planning plays an important key role in presenting opportunities for the informal sector to thrive.

Formalization and agility of urban planning policies and frameworks

National urban planning policies continue to evolve across the region in line with an increasing focus on sustainable urban development, resilience, inclusivity, climate action, smart cities and participatory processes. These policies facilitate an integrated approach and vision for urban and territorial planning that considers urban-to-rural linkages and fosters a common vision and cooperation across different levels of government and stakeholders, as advocated by the New Urban Agenda (NUA).

Several countries in the region are prioritizing integrated urban and territorial planning as a fundamental principle to support sustainable urban development. These efforts encompass promoting compact and well-planned cities, sustainable transport systems, energy efficiency, waste management and the conservation of natural resources. Malaysia, for instance, has successfully implemented national urban planning policies to guide sustainable development and urban growth, exemplified by the National Physical Plan (NPP). The NPP is focused on long-term spatial planning policy, providing a comprehensive framework for land-use development across the country (Malaysia, 2020), and has been successful in guiding sustainable urban development and fostering balanced regional growth. However, the implementation of the plan has encountered challenges due to limited capacity and resources, lack of coordination among different government agencies and levels, and difficulty in establishing effective monitoring and evaluation mechanisms.

The Republic of Korea has achieved significant success in urban planning and development. The country's Five-Year Plans for Balanced National Development (OECD, 2019b) has been instrumental in promoting subnational development and reducing disparities. The Government has focused on creating balanced growth across different subnationals, investing in infrastructure, promoting industrial clusters and enhancing connectivity through high-speed rail networks. The Cheonggyecheon Stream Restoration Project (World Bank, n.d.) in Seoul is a notable example of urban revitalization, transforming a neglected waterway into a thriving green public space. Similarly, the urban planning policies set by Japan emphasize compact and mixed-use development, efficient public transport systems, disaster preparedness and preservation of cultural heritage. The adopted Transit-Oriented Development approach, which focuses on urban development along transit corridors, has led to the creation of vibrant and walkable neighbourhoods.

Despite progress in recent years, urban and territorial planning in the Asia-Pacific region continues to face significant challenges, particularly among rapidly urbanizing countries that lack robust, formalized and agile planning frameworks. Many growing cities in the region are experiencing unregulated and unplanned growth patterns. Without formalization, it is difficult to prioritize long-term goals, address environmental concerns, and ensure equitable service delivery and development. Moreover, the lack of responsiveness of existing planning frameworks hinders the ability of local governments to act swiftly during crises, which is especially important in Asia and the Pacific, as the region is prone to typhoons, earthquakes and floods.

In summary, among the challenges faced by urban and territorial planning in Asia and the Pacific are the lack of formalization of planning frameworks, existing frameworks that are not agile enough to respond to multiple crises, fragmented governance, unregulated growth patterns and inefficient resource consumption. Overcoming these challenges requires the setting of robust policies and planning frameworks, enhanced governance mechanisms, integrating informal settlements, the promotion of social equity, and strengthened data collection and management systems. These efforts are essential to achieving sustainable and inclusive urban development in the region.

© Natalia - Historical Chew Jetty with wooden fishing boats, Unesco World Heritage site, George Town, Penang, Malaysia

Box 1.3. New capital city development in the region

Several countries in the Asia-Pacific region have developed new capital cities for a variety of reasons including, among them, to improve administrative efficiency, address overcrowding and overpopulation, and enhance urban planning and infrastructure.

The Vision of Indonesia 2045, led by the Ministry of National Development Planning, aims to establish Indonesia as a sovereign, advanced and prosperous country. To address accessibility, infrastructure constraints, transportation system challenges and overpopulation in Jakarta, the Government passed the Capital City Bill in January 2022, paving the way for the construction of the new capital city named Nusantara (ASEAN, 2020). The new capital is located at the geographic centre of the country and is planned to be a green and sustainable city that covers 632,850-acres (roughly three times the size of New York City). Seventy-five per cent of the city is planned as green space for protected land and food production. Construction of 14 per cent of the new capital's infrastructure has been completed. The new capital will not only relieve congestion, but it also will provide an opportunity to upgrade the strained infrastructure of Jakarta. By recognizing the need for sustainable development and acknowledging the flaws in infrastructure and connectivity, the Government of Indonesia has set an example for taking action and moving towards building an innovative city that supports societal growth and prosperity. This scale and magnitude of development requires a major investment. The Government has opened pathways for foreign investments combined with tax incentives (100 per cent tax holiday for 10 to 30 years) to encourage investment in all sectors, including infrastructure, maritime affairs, public works and education. These policies are presenting a new example of public and private funding for city development.

In 1995, Malaysia inaugurated Putrajaya as its federal administrative capital, shifting some of its administrative functions to the new city, which is only 25 km south of Kuala Lumpur (O'Connell, 2021). The new capital city was meticulously planned with designed infrastructure, wide roads, modern architecture and green spaces, making it an aesthetically pleasing and environmentally friendly city. Putrajaya is known as one of the greenest cities in the world, with an abundance of biodiversity, and it has a well-developed infrastructure system with good connectivity, including an efficient transportation network, which has made the city a popular destination for tourists. Overall, the new city development has contributed towards improved access to services and a better quality of life for all.

The Government of Turkmenistan led an integrated multilevel governance approach to plan and implement the new city of Arkadag. Based on the concept of a compact integrated and mix-use development, the city is being built to have 64,000 inhabitants with the aim of promoting a high quality of life as the new capital city for the Ahal region. The city's planning, implementation and management have been designed with a view of creating a vibrant, low-carbon, mixed-use and smart city that contributes to the implementation of the New Urban Agenda and the 2030 Agenda. The city plans to introduce the first public electric transport in Turkmenistan.[8]

[8] For further information on this initiative, see https://www.turkmenistan.gov.tm/en/post/73549/electric-vehicles-city-arkadag.

Embracing compactness for sustainability and resilience

Promoting compact integrated development is a comprehensive approach to urban planning that enhances the efficiency, liveability and sustainability of cities, while contributing towards the implementation of the 2030 Agenda.

Promoting compact integrated development is a comprehensive approach to urban planning that enhances the efficiency, liveability and sustainability of cities, while contributing towards the implementation of the 2030 Agenda. At the heart of Sustainable Development Goal 11 is the aspiration for liveable and affordable cities and communities, characterized by inclusivity, connectivity, resilience, safety, cleanliness and a people-centred approach. Compact mixed-use development aligns perfectly with this objective by optimizing land use and integrating diverse functions within a limited space, thereby improving accessibility, resilience and sustainability. This approach also directly contributes towards efforts to realize Sustainable Development Goal 10 by addressing social inequalities. Traditional urban planning often reinforces segregation and exclusivity, but an integrated approach breaks down barriers, which improve accessibility to housing, amenities and opportunities, ensuring that no one is left behind. Beyond promoting social equity, compact development also contributes to Sustainable Development Goal 7, which advocates affordable and clean energy. By facilitating the efficient use of resources and infrastructure, travel distance, energy consumption and carbon emissions are reduced, which further supports environmental sustainability. Moreover, this approach bolsters economic development, a central tenet of Sustainable Development Goal 8. The clustering of various functions within a compact space stimulates economic activity and entrepreneurship. As a result, local economies flourish, and individuals become better connected to employment centres, fostering social mobility and economic empowerment. In the grand tapestry of urban planning, compact mixed-use development has emerged as a compelling thread that weaves together the Sustainable Development Goals.

Improving quality of life and efficiencies

The benefits of well-designed compact cities, at a neighbourhood scale or at a larger city scale, are manifold. They contribute to improved quality of life for residents through efficient land use, reduced travel distances and congestion, enhanced social cohesion, vibrancy, cultural richness and livability. Economic viability and affordability are also promoted, along with sustainable resource management (Kotulla and others, 2019).

Higher densities of overlapping residents, businesses and leisure spaces promotes the sharing of resources and builds economies of scale, which can reduce living and infrastructure costs and risks, stimulate business opportunities, and make more efficient use of infrastructure and spaces. It also provides opportunities for small-scale entrepreneurship and local employment. Multi-tenant commercial buildings with anchor large tenants reduce costs for smaller tenants. The provision of public and private social spaces, and integration of live, work and play lifestyles and opportunities, also increases foot traffic and potential interactions of different businesses and potential collaborators that can drive cross-sectoral innovations and business development and increase consumer-facing businesses' profitability and resilience. Over time, this creative ecosystem can attract more businesses, entrepreneurs and other elements of business development ecosystems, one of the many benefits of urban agglomeration, which are maximized in hyperdense, mixed-use, pedestrian-driven compact urban cores of major cities (Moretti, 2013).

In addition, the development of intergenerational neighbourhoods can reduce city health-care systems' costs by integrating elderly care facilities. Volunteer and care resources become more accessible and available, as neighbourhood elderly residents can provide childcare services, which can support their mental resilience and well-being, and increase the inclusiveness of cities.

Compact development also reduces urban sprawl and its associated negative impacts. Sprawl increases municipal infrastructure development and operating costs, typically by 20-35 per cent. This, in turn, creates budget deficits for municipalities, while compact dense mixed-use districts generate municipal profits (Porter, 2021). In the long term, sprawl burdens residents with substantially higher living costs by requiring longer commutes and increased transport costs for both residents and municipalities to such a degree that the transport costs substantively negate savings from lower suburban housing purchase prices for residents. The increased utility demand and infrastructure costs of sprawl are typically passed on to residents. Sprawl reduces social mobility benefits that compact cities generate, thereby limiting residents' access to employment opportunities and affecting their ability to afford their costs of living.

Infrastructure efficiencies of compact cities provide municipalities with more funding, which frees up budgets to invest in more public goods, including soft infrastructure, such as public parks, business development and job training programmes.

Infrastructure efficiencies of compact cities provide municipalities with more funding, which frees up budgets to invest in more public goods, including soft infrastructure, such as public parks, business development and job training programmes (OECD, 2012). Brisbane, Australia has embraced the concept of a compact city to address urban sprawl and promote sustainable development. The city has invested in the expansion of public transport, including bus and ferry services, to connect residents to employment centres, educational institutions and recreational areas. The city's development approach encourages higher residential densities, better connecting residents to amenities and services.

Box 1.4. Compact development across neighbourhoods to megacities

Tokyo, a megacity, is known for its efficient land use and compact development, which demonstrates the applicability of the concept from neighbourhoods to megacities. The city's transit-oriented development approach has led to the creation of numerous mixed-use neighbourhoods, where residential areas are seamlessly integrated with commercial, retail and institutional facilities. This has given residents convenient access to amenities within walking distance, reduced the need for long commutes and eased congestion (Murooka, Shimizu and Taniguchi, 2021).

Seoul has successfully implemented compact mixed-use development in several neighbourhoods, such as Hongdae and Gangnam. These areas combine residential, commercial and cultural spaces, fostering a vibrant street life and sense of community. The integration of housing, offices, retail outlets and entertainment venues had created a lively and dynamic urban environment (Kim and Seo, 2019).

Melbourne has embraced compact mixed-use development principles, particularly in its central business district (and inner-city areas – which is also reflected in the city's active role in advancing the Sustainable Development Goals, such as through a Voluntary Local Review) (Melbourne, 2022). The city's urban planning policies encourage a mix of residential, commercial and cultural uses, resulting in vibrant neighbourhoods, such as Southbank and Docklands. These areas offer a diverse range of amenities and contribute to the city's economic vitality (Development Victoria, 2023).

Greener and more carbon neutral cities and neighbourhoods

The Rooftop Greening Initiatives of Hong Kong, China were developed to enhance the quality of life and environmental sustainability given the limited space in the city. Rooftops are transformed into green spaces with gardens, parks and urban farms. These initiatives provide recreational areas, improve air quality and foster community engagement through gardening activities, which is intended to increase the ratio of green spaces to 10m^2 per person, increase public green spaces that people can access within 400 metres or five minutes by walking across at least 50 per cent of the city, and increase urban tree canopy per urban area to 30 per cent of the city's total area (C40, 2020). Public pedestrian social spaces in compact walkable mixed-use districts, such as district plazas, courtyards and parks, boost social interactions by increasing foot traffic and the quantity and diversity of live, work and play activities within the area. Parks become more widely used and also offer greater potential for social interactions, as different building occupants access public spaces at different times, such as offices, restaurants, residences, daycare centres and schools. The strategic integration of wild natural environments into public spaces and neighbourhoods supports outdoor living.

Locating different land uses in close proximity reduces the distances between homes, workplaces, schools and amenities, encourages walking, cycling and the use of public transport, and reduces reliance on private vehicles. This helps to alleviate traffic congestion, lower carbon emissions and improve air quality. Launched at the Conference of Parties (COP) 21, which was held in 2015, the MobiliseYourCity Partnership was established as a leading global partnership for sustainable urban mobility planning and policy development for developing and emerging economies. The partnership has more than 70 member cities, with a combined population that exceeds 75 million people in 32 countries (MobiliseYourCity, n.d.). Under its Global Monitor 2023, it has identified investment needs of 22.3 billion euros – which includes cities in India,


© saiko3p - Mall main street in Manali, India

Indonesia and the Philippines, and ongoing projects for cities in Georgia, India, Pakistan, Sri Lanka and Thailand (Vemuri and others, 2023). Bus rapid transit systems have also transformed cities through the use of high-capacity buses with dedicated roadways in fifty Asia Pacific cities to date, transporting more than 9.6 million passengers per day (Global BRTData, 2023), while reducing congestion, local air pollution and global carbon emissions.

Developing a compact city is key to achieving carbon neutrality by improving energy and resource consumption. Integrated, compact, pedestrian-driven mixed-use cities consume less land area and household energy, and are more profitable for municipalities, residents and businesses (UN-Habitat, 2018). Sustainable resource management is enhanced by reducing the need for long-distance travel and associated energy consumption. It encourages the use of public transport, walking and cycling. Moreover, compact mixed-use development often incorporates green spaces and sustainable infrastructure, improving environmental sustainability and enhancing the resilience of urban areas. Table 1.1 shows the contribution of compact urban development to sustainability.

Table 1.1. The contribution of the compact city to urban sustainability

Sub-characteristics of the compact city	Contribution to urban sustainability		
	Environmental benefits	Social benefits	Economic benefits
Shorter intra-urban travel distances	Fewer CO_2 emissions Less pollution from automobiles	Greater accessibility due to lower cost	Higher productivity due to shorter travel time for workers
Less automobile dependency	Fewer CO_2 emissions Less pollution from automobiles	Lower transport costs Higher mobility for people without access to a car Improved human health due to more cycling and walking	Development of green jobs/technologies
More district-wide energy utilization and local energy generation	Less energy consumption per capita and fewer CO_2 emissions	Lowering cost of energy supply to households	Development of green jobs/technologies More energy independence Lowering cost of energy supply to households
Optimum use of land resources and more opportunity for urban-rural linkages	Conservation of farmlands and natural biodiversity Fewer CO_2 emissions due to shorter food travel mileage	Higher quality of life due to more recreational activities	Rural economic development (such as, urban agriculture and renewable energy)

Source: OECD (2012).

Planning compact cities can occur at multiple levels, involving various stakeholders and decision-making bodies. This includes national and subnational governments setting broad guidelines and frameworks to shape urban development through urban and territorial policies and city or metropolitan governments through the development of master plans or city-wide planning frameworks, and or at neighbourhood or project levels, through partnerships with civil society and the private sector. Overall, promoting compact integrated development is vital for sustainable urban development, as it contributes towards efforts aimed at realizing multiple Sustainable Development Goals and fostering efficient, livable and vibrant cities for future generations.

Inclusive access to housing in a multi-crises context

Access to affordable and adequate housing is an absolute necessity to attain a decent quality of life and for the development of sustainable and resilient cities. This is especially relevant in a multi-crises context in which building resilience at the household and city levels is essential for addressing challenges related to disasters, climate change, public health emergencies, and social and economic shocks. According to the Office of the United Nations High Commissioner for Human Rights (OHCHR), climate-fuelled disasters were the main driver of internal displacement over the past decade, forcing an estimated 20 million people from their homes each year (United Nations, 2022). Those who are homeless or lacking access to resilient or secure housing are the most adversely affected, often living in areas that are vulnerable to floods, hurricanes and cyclones, storm surges, mudslides, earthquakes and tsunamis. Many countries implementing disaster risk management measures fail to consider their effects on vulnerable communities and their right to housing. Estimates indicate that the building and construction sector accounts for 39 per cent of global energy-related carbon dioxide (CO_2) emissions, most of which is concentrated in middle- and high-income countries (United Nations, 2022). However, low-income countries require the most construction if Sustainable Development Goal target 11.1 is to be achieved. Member States need to respond urgently to the climate crisis and also ensure access to sustainable housing, while focusing on those most in need. The Human Rights Council, in its resolution 43/14, adopted on 19 June 2020, calls upon States "to take the right to adequate housing into account in strategies for adaptation to and mitigation of climate change" and "to work with affected communities and individuals to develop and promote environmentally sustainable and sound housing design, construction and maintenance to address the effects of climate change while ensuring the right to adequate housing".

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Prioritizing and investing in affordable and adequate housing allows cities to address these interconnected crises by providing stability, resilience and support to vulnerable communities. Energy-efficient construction methods, adopting electrically powered appliances and heating and cooling systems, and locating housing near public transit are several strategies that can reduce the impact of housing on climate change. Housing and communities can also be designed and built to be more resilient to natural disasters and climate change (Office of Policy Development and Research, 2022). Additionally, housing construction can stimulate economic activity and jobs. A key target of the Sustainable Development Goals, under Goal 11 target 11.1 is to ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums by 2030. However, the foundation nature of housing makes it an integral part of several other Goals (Habitat for Humanity, 2021).

Many informal settlements are also in ecologically sensitive areas, such as riverbanks, hillsides or coastal zones, increasing the vulnerability to natural disasters and environmental degradation. Balancing the need for upgrading while ensuring environmental sustainability and resilience poses significant challenges. Addressing these challenges requires a comprehensive and multidimensional approach that considers legal frameworks, financial mechanisms, community participation, institutional capacity-building and sustainable urban planning strategies. It is essential to adopt inclusive people-centred participatory approaches that involve building communities and ensure their meaningful participation in decision-making processes to prioritize their needs.

Inclusive upgrading approaches

Embracing participatory planning and community engagement approaches enables residents of informal settlements to actively participate in shaping the decisions that impact their living environment. These approaches foster a sense of ownership and result in the development of sustainable solutions that meet the specific needs of residents. Examples of successful initiatives were implemented in Thailand, where the Baan Mankong programme has supported participatory slum upgrading projects (Chandran, 2021), and in India, where the Rajiv Awas Yojana focuses on inclusive and sustainable housing for the urban poor (India, n.d.). These efforts highlight the importance of adequate and affordable housing, and inclusive approaches in addressing the challenges faced by informal settlements and improving the living conditions of vulnerable populations in the Asia-Pacific region.

There are many challenges associated with the upgrading of informal settlements. These settlements often lack legal recognition and secure land tenure, which makes implementing upgrading initiatives difficult. Unclear property rights and ownership disputes can hinder the formalization process and lead to resistance from residents or conflicting interests among stakeholders. Significant financial resources are required. Limited access to funding and budget constraints, especially at a local level, can impede the implementation of comprehensive and sustainable upgrading programmes. Securing financing for infrastructure development, housing improvements and community facilities is a common challenge. Informal settlements often lack basic infrastructure and essential services, such as water supply, sanitation, electricity and paved roads. Upgrading efforts require the provision of these services, which may be costly and technically challenging, especially in densely populated settlements with limited space.

Engaging and mobilizing residents to participate in the upgrading process can be difficult due to mistrust, differing priorities and conflicts within the community. Effective coordination and collaboration among government agencies, local authorities and stakeholders is vital for the successful implementation of upgrading initiatives. However, limited institutional capacity, fragmented governance structures and inadequate coordination mechanisms can hinder the planning, implementation and monitoring of upgrading programmes.

Effective coordination and collaboration among government agencies, local authorities and stakeholders is vital for the successful implementation of upgrading initiatives.

The Asia-Pacific region has developed innovative solutions that are applicable at scale if urban governance systems are enabled to do so. For instance, in India, in Maharashtra state, of which the state capital is Mumbai, developers can be given ownership of informal settlement areas at no cost, if the residents consent, and redevelop the land in any manner they choose, as long as the existing households are provided housing in the redeveloped area for free (Cooper, 2020). Because of high land values, developers must develop mixed-use, dense developments on the land to generate a profit. This results in the development of high-quality, mixed-income and mixed-use compact, pedestrian-friendly communities.

Informal settlements not located in precarious areas within cities can be more effectively integrated through in situ upgrading that regularizes land rights and improves access to basic services and housing.

Urban planning's vital role in enabling affordable housing

Urban planning can play an important role in enabling affordable and inclusive housing through policies, regulations and development strategies that address the problems related to the affordability of housing in cities.

Urban planning can play an important role in enabling affordable and inclusive housing through policies, regulations and development strategies that address the problems related to the affordability of housing in cities. Policies and regulations can require developers to include a certain percentage of affordable housing units in their projects. By mandating a mix of affordable and market-rate housing, planners ensure that affordable housing options are integrated into various neighbourhoods, which, in turn, promotes socioeconomic diversity and prevents the concentration of poverty (Local Housing Solutions, n.d.). Promoting the development of higher-density and mixed-use projects can increase the housing supply and make housing more affordable. By allowing for greater building heights, reduced building lines and flexible zoning regulations, planners can encourage the construction of more units on a given parcel of land, making housing more economically feasible (Freemark, 2023).

Another solution is to offer incentives, such as expedited permits, density bonuses or financial subsidies to developers, who include affordable units in their projects. By aligning incentives with affordable housing goals, planners can encourage developers to participate in initiatives intended to promote affordable housing (MRSC, n.d.). Urban planning can also focus on preserving and rehabilitating existing affordable housing stock. Planners can identify at-risk properties and implement strategies to maintain their affordability, such as offering tax credits, grants or loans for renovations, and ensure long-term affordability agreements. This approach prevents the loss of affordable housing units due to market pressures or deterioration (Allbee, Johnson and Lubel, 2015).

The pandemic caused a significant shift in housing markets and housing demand, and showed the centrality of housing and inequities in cities. Because of the lockdown mandates and social distancing, a large portion of the labour market used telework, which led to increased demand for larger dwellings and higher house prices. Maintaining an affordable housing supply in a city with a growing economy is equally challenging. This is demonstrated by the general deficiency in housing supply, as evidenced by the low ratio of housing compared to GDP, low housing loans as a share of total credit ratio (Carrasco and Shah, 2018), and that one third of the region's households live in informal settlements (ADB, 2014). Urban planning can contribute towards increasing housing supply by ensuring efficient land-use practices and allocating land for mixed-use developments that include affordable housing and setting appropriate density requirements close to transportation hubs. Urban planners can be instrumental in the streamlining approval processes for housing projects, which would reduce bureaucratic hurdles and expedite construction timelines.

Improving housing affordability requires a multi-faceted policy approach. Facilitating a stronger supply-side response is essential for countries in the region to address underlying imbalances. This requires a review of land-use regulations, greater focus on urban planning, incentivizing the use of idle land, and the provision of adequate social and affordable housing directly by the public sector and indirectly through incentives offered to private developers. Supply-side measures often take time to produce results, while placing a premium on demand-side measures tends to work more quickly. Such measures can include targeted government support, progressive taxation on property, targeted macroprudential policy to contain systemic risks while being mindful of its repercussions on lower-income households and owner-occupiers, and making use of targeted financing, insurance and guarantee mechanisms (Deb and others, 2022).

Strengthening urban and territorial planning

To strengthen and advance urban and territorial planning in the region, policymakers, governments, developers and communities need to work together to create an enabling and agile regulatory framework, and expand urban development finances in ways that contribute to the effective planning and socioeconomic performance of urban areas while taking into consideration the challenges presented by the multi-crises context. In this regard, below are some key recommendations.

Key Recommendations

Create a policy environment for transformative and resilient urban planning, enabled by multilevel governance

To address the challenges resulting from a multi-crises and promote sustainable urban development, it is imperative to further support the formalization, agility and integration of national urban policies and subnational planning frameworks and policies supported by international commitments and national and subnational transformative visions, while being aligned with local priorities. Maintaining an effective regulatory framework requires adopting participatory approaches, promoting inclusivity and social equity, and strengthening monitoring and evaluation.

Integrated urban planning approaches should be promoted, while taking into account the interdependencies between different sectors and systems as a critical tool to support long-term development, and crisis adaptation and mitigation strategies. Multi-stakeholder engagement and participatory processes should be fostered to ensure inclusivity and transparency. Collaboration and networking among cities, along with financial support, would further support sustainable urban development.

Ensure the provision of capacity-building and coordination for effective urban planning and local action

To overcome the impacts of multiple crises and contribute towards sustainable development, building capacity and resources, and strengthening the authority of cities to govern and plan effectively lays the foundation for effective local action. Successful implementation requires intergovernmental coordination, clear roles and responsibilities, allocation of resources, synchronized action, institutional capacity and addressing fragmented governance. Capacity-building programmes and knowledge exchange platforms should be established to enhance the skills of city officials and planners, especially to deal with multi-crises situations.

Develop holistic housing, urban planning and disaster-risk management policies, strategies and regulations to address the affordable housing crisis in cities

To boost access to adequate and affordable housing in cities and tackle the housing crisis, a comprehensive approach, the engagement of multiple stakeholders and the development of various intersecting housing, planning and disaster-risk management policies, strategies and regulations are needed. This includes setting clear housing affordability targets across a variety of tenure arrangements, providing incentives for the development of affordable housing, fostering public-private partnerships, developing innovative financing mechanisms, reforming regulations to streamline processes, developing targeted social housing programmes and upgrading informal settlement, promoting mixed-income neighbourhoods, allocating public land for affordable housing, engaging communities in decision-making processes and securing sufficient financial support. By implementing these measures, cities can address the pressing issue of housing affordability and create inclusive urban environments where residents have access to quality housing. This would improve living conditions, reduce housing inequalities, and contribute towards the overall well-being, improved resilience and sustainability of cities in the Asia-Pacific region.

Promote integrated, compact, mixed-use neighbourhoods and cities supported by public transport and active mobility to meet climate and sustainability targets

To promote the establishment of integrated compact mixed-use neighbourhoods and cities during multiple crises with the objective to foster resilience, sustainability and social cohesion, Asia-Pacific governments must prioritize and implement key strategies. This entails revising zoning and land-use policies to facilitate mixed-use development, developing guidelines and urban planning strategies that encourage universal design principles to ensure barrier-free access to cities and services, especially for women, the elderly, people with disabilities and young people, fostering public-private partnerships to support the development of these neighbourhoods, engaging local communities, ensuring social equity investing in infrastructure and connectivity, reforming regulations to streamline processes, and establishing monitoring and evaluation mechanisms. By adopting these policy recommendations, governments can create urban environments that are compact, economically vibrant, socially inclusive and environmentally sustainable, which would result in improved livability and quality of life for residents.

A continued commitment and comprehensive approach to integrated transport and land-use planning can further enhance sustainable mobility. Financial support needs to be directed to public transport and active mobility infrastructure and services, including shared bikes, e-bikes, e-scooters and ride hailing. Safe road infrastructure and parking, clear regulations, affordable prices, and payment methods that are also accessible to low-income groups would, therefore, need to be considered (ESCAP, 2021).

The future of urban development in the Asia-Pacific region is a choice. The continued growth and urban development investments in the region in the coming decades present a unique opportunity. In this chapter, it is clearly indicated that urban and territorial planning will play a key in the development of more compact cities and addressing the housing crisis, which can significantly contribute towards increased quality of life, sustainability and resilience across the region, and substantively mitigate adverse effects resulting from the diverse crises the Asia-Pacific region faces. By incorporating climate imperatives into urban and territorial planning, cities and communities would be better prepared to cope with the challenges of the changing climate, which is the subject of the next chapter.

02

Chapter 02

Urban resilience at a crossroads: *multilevel climate action*

The concept of urban resilience is ideally suited to plan for the multiplicity of shocks and stressors that Asia and the Pacific cities face.

As highlighted in the 2019 Future of Asian & Pacific Cities Report, resilience-building entails enhancing systemic urban attributes, such as localized robustness and flexibility (ESCAP, 2019b). Building resilience enables cities and towns to better cope with, and capitalize on, unexpected and unknown external crises (Trundle and others, 2016). As multiple interlinked crises continue to evolve, focusing on resilience makes it easier to shift away from a predisposition towards targeted efficiencies, maximized productivity and siloed specialization, and marks a step-change from pre-COVID efforts to frame cities primarily as the engine-rooms of economic development across the region (Friend and others, 2014).

Climate change is a "wicked problem" and a multifaceted global threat that affects urban development in the Asia-Pacific region. It interconnects urban production, consumption and associated city-centric resource flows and concentrations with long-term, non-linear impacts that adversely affect the inhabitants, infrastructure and ecosystems within these human-dominated spaces. The coupling of climatic and urban changes in the region acts as a confounding "helix", with these dual dynamics complicating adaptation planning and efforts to build climate resilience. Low-carbon growth and the transition of urban areas presents the greatest economic opportunity globally in more than a century. The focus of this chapter is on climate-related elements of resilience by examining how the cities of Asia and the Pacific are forging pathways to mitigate, adapt and capture the opportunities arising from the climate crisis.

Low-carbon growth and the transition of urban areas presents the greatest economic opportunity globally in more than a century.

As already noted, Asia and the Pacific is home to more than half of the world's urban population. The region became officially "majority urban" in 2019 (ESCAP, 2019b). However, midway through the critical decade for climate action, and the implementation period for the 2030 Agenda, the region's interrelated progress towards sustainable urban development and low-carbon, climate-resilient cities and towns remains significantly off-track (ESCAP, 2023). Data on Sustainable Development Goal 11, as noted elsewhere, are generally poor. Key areas that are falling short of the targets of the 2030 Agenda, such as reducing human and economic losses due to disasters (11.5), are being directly hindered by the accelerating onset of climate change. These impacts are particularly acute in the cities and towns of Asia and the Pacific, which are disproportionately located in coastal, riparian and delta areas. These areas are also being heavily affected by tropical and monsoonal hydrological cycles, increasing their vulnerability to climate risks, such as storm surges, cloud bursts, tropical cyclones and flooding (Nunn, Smith and Eldrick-Barr, 2021; Rollins, Wheeler and Frazier, 2022).

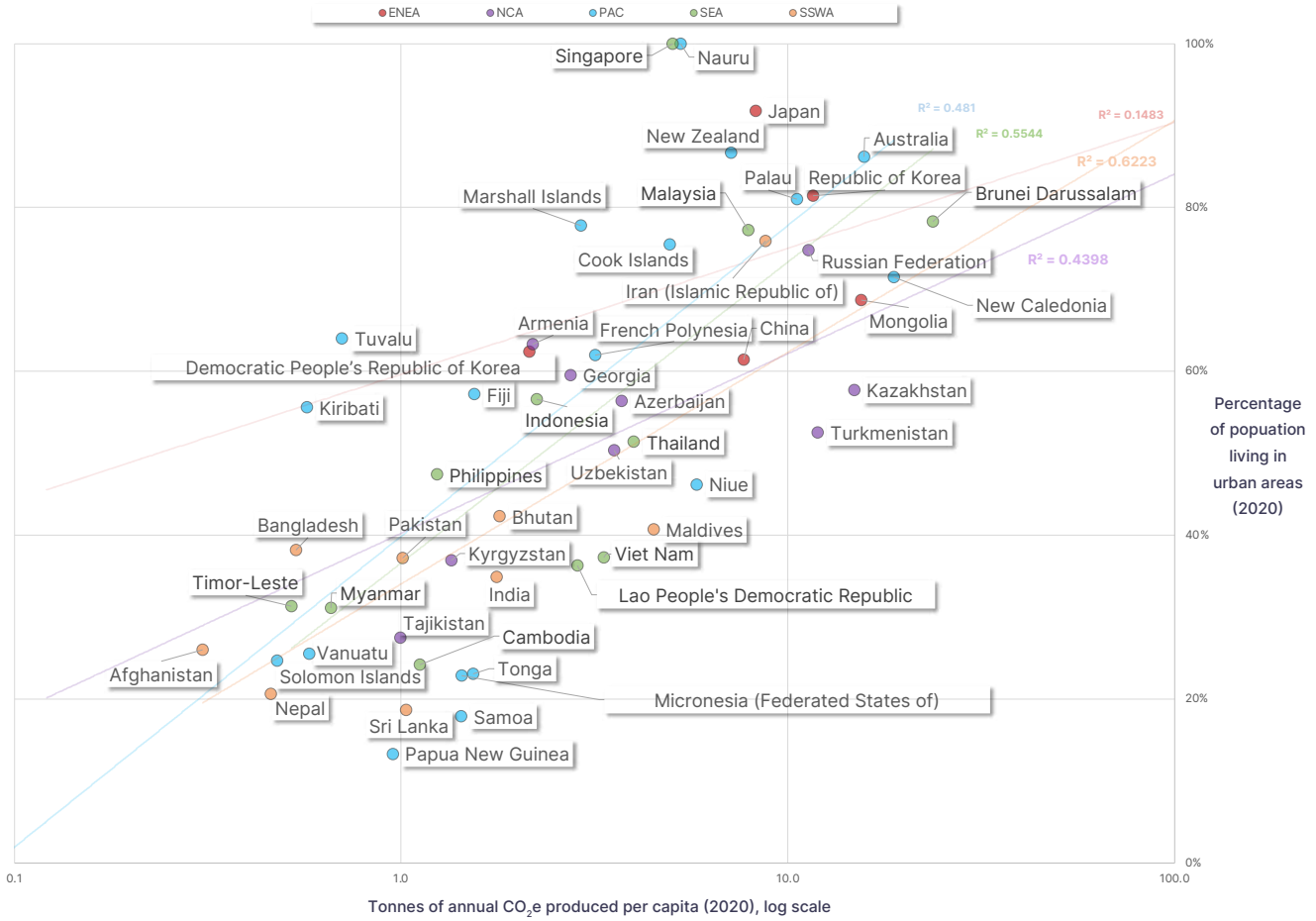
Low-carbon urban futures

Globally, a strong correlation between levels of urbanization and greenhouse gas emissions continues. Decoupling urbanization trends from carbon-intensive growth is imperative. This correlation is intertwined with not only household-level income and consumption increases in urban areas, but also with the role of cities in key areas of energy-intensive production (Rafiq, Salim and Nielsen, 2016). Cities account for an estimated 70 per cent of global energy consumption and a similar share of global carbon emissions (IPCC, 2022). Despite positive signs of a decoupling of urbanization levels and carbon emissions across the OECD countries (Wang and others, 2021) and in some metropolitan areas in Asia (Fujii and others, 2018), this pattern is not yet evident in urbanizing emerging economies, where the bulk of future urban growth will occur, and where energy consumption is growing the most rapidly (Rafiq and others, 2016; Wang and others, 2016).

Despite positive signs of a decoupling of urbanization levels and carbon emissions across the OECD countries and in some metropolitan areas in Asia, this pattern is not yet evident in urbanizing emerging economies, where the bulk of future urban growth will occur, and where energy consumption is growing the most rapidly.

As shown in figure 2.1, more heavily urbanized countries across Asia and the Pacific tend to have higher per capita carbon emissions. This is a function of the more conventional carbon-intensive economic development pathways followed by many of the region's member States and the continued presence of carbon-intensive production and the extraction of fossil fuels carried out by many of the region's more developed countries (Andrew and Peters, 2022). The more urbanized countries and territories of East and North-East Asia are hubs of industrial production and exporters of a significant share of the world's value-added consumer products; resource flows are not reflected in territorial production-based carbon intensity measures. The Pacific, however, diverges significantly between the highly urbanized and more developed members of Australia and New Zealand, and the broader spectrum of Pacific island countries and territories where carbon footprints are lower, and urban consumption and production patterns differ from much of the rest of the world (Komugabe-Dixson and others, 2019).

Figure 2.1. Per capita greenhouse gas emissions in relation to urbanization in Asia and the Pacific



Sources: Author's own elaboration. Data sourced from United Nations Department of Economic and Social Affairs (2018b); Global Carbon Atlas. Available at https://globalcarbonatlas.org/emissions/carbon-emissions/ (accessed on 28 June 2023).

By 2050, it is projected that approximately half of the world's additional urban dwellers will be within this region; India, China, Bangladesh and Indonesia are expected to account for two thirds of this growth.

By 2050, it is projected that approximately half of the world's additional urban dwellers will be within this region; India, China, Bangladesh and Indonesia are expected to account for two thirds of this growth (United Nations Department of Economic and Social Affairs, 2018b). India is projected to have reached "majority urbanized" status slightly before the middle of this century. If the world's most populous country were to follow a similar urbanization pathway as China over the latter half of the twentieth century, the addition of a further 400 million urban Indian citizens would correlate with a more than doubling of per capita territorial emissions across rural and urban inhabitants. With a projected national population of 1.6 billion, this equates to a total territorial production of 6.4 Gt CO_2e by 2050, more than double its current level, and an amount equivalent to the current level of the United States of America today (Andrew and Peters, 2022). It is, therefore, critical that urbanization trajectories in Asia and the Pacific are decoupled from carbon-intensive modes of urban livelihoods, consumption and production.

City-level emissions reporting in Asia and the Pacific is limited by the low proportion of cities that offer voluntary carbon disclosure and by complexities and gaps in reporting methodologies. There are key issues from differences in subnational governance (for instance, comparing urban agglomerations to municipal and other subnational boundaries), the scope of emissions reported, and the selection of greenhouse gases measured (Wiedmann and others, 2021). The largest data set collating city-level emissions data globally is maintained by the Carbon Disclosure Project, which draws on an annual survey it conducts in partnership with ICLEI – Local Governments for Sustainability. As of 2020, more than 800 cities have voluntarily reported their carbon emissions through the Carbon Disclosure Project (Carbon Disclosure Project, 2021). However, only 15 per cent of the cities reporting were in the Asia-Pacific region, even though it is home to more than half of the world's cities with a population that exceeds 500,000 (United Nations Department of Economic and Social Affairs, 2019).

Of the 100 Asian cities reporting mitigation actions to the Carbon Disclosure Project in 2020, a total of 44 per cent had a city-wide emissions reduction target and 48 per cent had a climate action plan.

Of the 100 Asian cities reporting mitigation actions to the Carbon Disclosure Project in 2020, a total of 44 per cent had a city-wide emissions reduction target and 48 per cent had a climate action plan (Climate Disclosure Project, 2021). These results were significantly higher than the other predominantly developing regions of Africa and Latin America. In the Pacific, these percentages were higher again – 71 per cent and 67 per cent, respectively. These figures were comparable with those of North America, and higher than those associated with European countries, but disclosing cities were located entirely within Australia and New Zealand and did not include any Pacific Island urban agglomerations.

Measurement and reporting are critical to enabling low-carbon urban futures, as they are foundational to policy development and central to ensuring equity in transformative urban change (Leavesley, Trundle and Oke, 2022). Analysis of carbon emissions attributable to existing urban areas and from urban expansion needs to be accelerated across the region. However, a wider evidence base is needed to establish policy rationales and priorities for reducing urban-related emissions (Mokhles and Davidson, 2021). The Global Covenant of Mayors for Climate and Energy is the largest global alliance for city climate leadership; it includes more than 11,500 city and local governments, of which 324 are in the following ESCAP subregions: the Pacific; South-East Asia; East and North-East Asia; and South and South-West Asia. The Global Covenant of Mayors for Climate and Energy City Research and Innovation Agenda proposes four steps – or stages – to generate evidence-based climate actions at the city scale (Oke and others, 2022). These steps were based on an increasingly cohesive global urban discourse on climate action, building on the seminal Intergovernmental Panel on Climate Change (IPCC)-facilitated Cities and Climate Change Science Conference, held in Edmonton, Canada in 2018 (Hunter and others, 2022).

Cities as catalysts for climate action

Despite many cities across Asia and the Pacific championing climate action, most of the region's urban areas remain heavily dependent on fossil fuels. Cities often face limitations in choosing their energy mix because energy supply tends to be under the legislative jurisdiction – or direct ownership – of national or provincial governments. A recent ESCAP report reviewing climate ambition in Asia and the Pacific identified that four fifths of the region's member States have made net-zero or carbon neutrality pledges at the national scale (ESCAP, 2022). However, emissions trajectories across the region and national determined contributions (NDCs), which set out climate actions committed by United Nations Member States, have yet to reflect these aspirations. As of November 2022, the region's NDCs reflected a total increase in greenhouse gas emissions of 16 per cent from 2010 levels by 2030 (ESCAP, 2022). Limiting global warming to 1.5°C requires emissions from Asia-Pacific to reduce to nearly 50 per cent over the same period (ESCAP, 2022).

The Asia-Pacific region has collectively accounted for more than half of global greenhouse gas emissions every year since 2012. Between 2010 and 2020, the region's emissions rose by 25.5 per cent, while the rest of the world's emissions declined by 0.3 per cent.

The Asia-Pacific region has collectively accounted for more than half of global greenhouse gas emissions every year since 2012. Between 2010 and 2020, the region's emissions rose by 25.5 per cent, while the rest of the world's emissions declined by 0.3 per cent (ESCAP, 2022). Throughout 2022, emissions from natural gas globally declined by 1.6 per cent – driven by the crisis in Ukraine – and by an even larger 1.8 per cent in Asia and the Pacific (IEA, 2023a). However, the resulting energy demand led to the rapid expansion of coal use. Emissions from coal reached a record high of 15.5 Gt CO2e in 2022, while emissions from oil spiked 2.5 per cent (IEA, 2023a). Emissions from developing and emerging economies and markets in Asia, excluding China – grew by 4.2 per cent, faster than any other region globally. It is, therefore, critical that cities in Asia and the Pacific are not only at the centre of efforts to decarbonize the existing urban systems, but also that their local governments and associated national agencies are able to adapt urban growth rapidly to become compatible with zero carbon urban futures.

Despite limitations, cities are taking on creative and impactful decarbonization interventions. In the REN21 second global review of cities, an inventory was conducted of a range of best practice examples of local governments driving low-carbon transitions in their cities and towns (REN21, 2021). Observed interventions can be broadly grouped into four categories: (a) stationary energy supply integration for buildings, infrastructure systems and waste management; (b) electric and active transport; (c) built form energy efficiency upgrading and electrification; and (d) incentives for decarbonization of urban industry and commerce. Cities across Asia and the Pacific continue to pursue innovative approaches in many of these areas, but subregional issues, national governance frameworks and differing city typologies, have led to distinct variations in these low-emissions pathways.

Cities are also motivated by public health and mobility factors that intersect with decarbonization goals. Prior to the COVID-19 pandemic, increasing health concerns relating to urban air pollution and smog emerged as a distinctive driver of the uptake of renewables across much of Asia (Jabbar and others, 2022; Liu Kong and Zhan, 2021). This has underpinned urban-focused elements of national decarbonization strategies in countries such as China as well as municipal efforts to advocate stronger national decarbonization efforts in countries such as Japan and the Republic of Korea (REN21, 2021). It has also accelerated e-mobility and hydrogen vehicle uptake, including through the procurement of municipal fleets, public transport vehicles and facilitation of rideshare schemes, which provide an "off-ramp" for the decentralized, oil-dependent urban transport sector.

China, Europe and the United States of America collectively accounted for 95 per cent of global electric car sales in 2022 (IEA, 2023b) but in emerging markets and developing economies across Asia, demand for electric vehicles is increasing rapidly (IEA, 2023b). Electric car sales in India, Thailand and Indonesia tripled between 2021 and 2022. China, Japan and the Republic of Korea remain important global exporters of electric cars, electric motors and lithium-ion batteries.

Within cities, facilitation of active transport – including electric-assisted mobility options, such as e-bikes, provides an essential multifaceted platform for addressing climate mitigation, urban congestion and human health and well-being (Moloney and Doyon, 2020). The COVID-19 pandemic has resulted in volatile and nationally varied shifts in transportation, with social distancing temporarily reducing use of public transport, and evolving work-from-home patterns continuing to further shift transport behavior. Several countries across Asia and the Pacific have incorporated sustainable transport initiatives within their COVID-19 recovery plans through a subset that specifically targets low-emissions transport options in urban areas. Examples of countries doing this are Bangladesh, China, Indonesia, Nepal and Pakistan, all of which have integrated incentives for electric vehicles and associated charging infrastructure into their recovery strategies. The Philippines and China also have included initiatives to build infrastructure for cycling (Earley and Newman, 2021).

The global diversity in city-level approaches to climate mitigation also provides a rich tapestry of policy, infrastructure and investment experiments that are regularly shared and adopted horizontally on an ad hoc basis, rather than as part of a more comprehensive multisectoral low-carbon strategy (Haupt and others, 2020). One of the earliest global climate-focused city networks is C40, which has inventoried more than 14,000 city-based climate actions and includes 94 of the world's largest cities, encompassing 15 per cent of the world's urban population and a quarter of global GDP (Davidson, Coenen and Gleeson, 2019). Critically, C40 has been noted as one of the most effective platforms for replicating urban climate action. Notably, a review of actions carried out in 2015 indicated that three quarters of those undertaken by C40 cities were subsequently implemented by other cities across the network (Acuto, 2016).

Urban climate influencers: beyond city boundaries

City governments are often restricted in their capacity to directly finance medium- and large-scale supply-side initiatives due to legislative boundaries. The extent to which baseload energy is supplied from within city areas varies significantly, as many urban areas are being powered from large power plants outside of their municipal boundaries, whose associated greenhouse gas emissions fall under the "Scope 2" classification (Lovell and Parry, 2022). However, several municipal councils in Melbourne, Australia, found novel non-monetary approaches to incentivize the uptake of renewables within their jurisdictions, bringing together residents interested in purchasing household solar photovoltaic systems to leverage heavy discounts from solar providers without substantive support from either the private sector or national or state governments (Hadfield and Cook, 2019).

Development assistance for climate mitigation projects remains primarily focused on the national-level, rather than at the city-level scale, for lower- and middle-income countries across the region. Investments through multi-partner programmes and multilateral climate finance mechanisms are having a substantive impact on the energy mix of several Asia and the Pacific cities. One of the most substantive projects in the Pacific subregion is the Tina River Hydropower project in Solomon Islands, which is designed to shift the capital Honiara from being dependent on diesel generated baseload power to renewables by 2026 (Green Climate Fund, 2021). Renewables with storage are particularly appealing in Pacific cities and towns that depend on diesel imported through lengthy supply chains and therefore, must contend with some of the world's most expensive electricity and transport costs (Cable.co.uk,2022).

Even in North and Central Asia, where fossil fuels are available in abundance, investment in renewables is improving grid reliability and expanding beyond the conventional use of hydropower across much of the subregion. Nearby, in the Kazakh city of Kyzylorda and the town of Shu, for instance, ADB has financed two major solar plants to tackle urban electricity shortages, as ageing coal power plant fleets begin to fail (ADB, 2021a). These projects are intended to scale up investment in the sector across Kazakhstan. Meanwhile, energy efficiency measures being deployed across the Kazakh capital, Astana, with support from the World Bank, are reducing demand-side pressure and allowing for better integration of emerging energy technologies (Behnke and others, 2017).


© Suplim - Aerial view of a Ho Chi Minh City, Vietnam

Some city governments are also using their control over development processes to incorporate decentralized energy requirements. The Chinese city of Luanzhou, for example, requires that new residential buildings with less than twelve floors install a solar water heating system, while under master planning processes for green field sites, Chinese cities, such as Shenzhen, Zhongba and Saga have rolled out solar district heating systems (Islam and Kenway, 2022). Similarly, the local government for the Australian capital, Canberra, is in the consultation phase of a regulatory proposal to ban new gas connections across the city by 2024, as part of efforts to remove fossil fuel from the city's stationary energy supply after already transitioned the city's existing electricity supply to renewable sources in 2020 (Australia Capital Territory Government, 2022).

Box 2.1. Women in city leadership – champions of transformative climate action

In the 2022 Sustainable Cities Index, it was noted that half of the top 10 sustainable cities were led by female mayors (Torrie and Morson, 2022). In contrast, United Cities and Local Governments estimates that just 5 per cent of mayors globally are women and that female elected local government representatives are outnumbered by men at a rate of four to one (United Cities and Local Governments, 2015). In Asia and the Pacific, among the "top 50" sustainable cities with female leaders are Sydney (Australia), Mumbai (India), Tokyo (Japan) and Singapore, representing more than half of the cities listed from across the region.

Since 2017, C40 cities has been running Women4Climate, a global gender-inclusive climate action leadership training programme (C40 Cities, 2019). The objective of the initiative is to scale and replicate the learnings from women who have or continue to hold positions of leadership in global cities taking transformative climate action, and provide training, toolkits and networks designed to support emerging women leaders and develop more gender-inclusive urban climate action policies.

The initiative also highlights key ways that women are disproportionately affected by climate change-induced disasters, an inequity that affects women directly and has wider societal implications for the resilience of urban communities as a function of the prevalence of women tasked with caring responsibilities and unpaid work in cities and towns globally.

Urban climate adaptation: uncertain pathways through multiple interlinked crises

Urban climate change adaptation – the process of modifying cities and towns to deal with occurring, unavoidable and projected impacts from anthropogenic climate change – has historically focused on the risks that are posed to a city's built form, its inhabitants, and its capacity for economic production (Trundle and Organo, 2022). In contrast to the proposal put forward above, these changes are generally presented as being incremental, addressing particular current or projected climate shocks and stresses through interventions in the physical form and function of cities and towns (Berrang-Ford and others, 2021). These types of interventions often focus on the components of urban systems that are most vulnerable (such as informal settlements), most critical (such as major infrastructure or transport assets), or most influential (such as building codes or insurance schemes) (Eakin, Keele and Lueck, 2022; McEvoy and others, 2013; Trundle, Barth and McEvoy, 2019).

More radical, transformative propositions are emerging, however, as climatic changes worsen and tipping points are reached at local and global scales. Many of these transformative adaptive processes are being put forward within Asia and the Pacific. The relocation of the capital of Indonesia from Jakarta to East Kalimantan is one of the earliest examples of a mass urban relocation in part due to the climate crisis (Van de Vuurst and Escobar, 2020). Countries in the Pacific are also drawing up plans to relocate communities at the highest risk from climate impacts in order to avoid internal mass displacement, as thresholds for habitation and livelihoods are crossed, the collapse of livelihoods in low-lying rural areas is the earliest clear evidence of climate-induced rural-to-urban migration in the region, which increases a form of urbanization that is not currently well modeled or understood (McDonnell, 2021; Trundle, 2021).

© aryfahmed - Hulhumale - Maldives, Aerial view from side

Box 2.2. Economic and Social Commission for Asia and the Pacific Maldives project – Downscaled IPCC AR6 climate model for granular risk assessment and policy making

Maldives has one of the lowest terrains in the world; more than 80 per cent of its islands are less than 1 metre above the mean sea level. Given the global sea-level rise of 3 to 4 millimetres per year, 31 to 50 per cent of the Maldives population are likely to be exposed to sea-level rise and related events, such as coastal storm surges. Coastal inundations are expected to take place more frequently by 2100 under the business-as-usual scenario (SSP2). ESCAP has used IPCC AR6 global climate projection data on sea-level rise in combination with high resolution Copernicus sea-level anomaly data to identify the risk hotspots. The results show that approximately 14 per cent of urban areas with 0 to 1 metre elevation are under the risk of a 1 metre increase in sea level under the future climate scenario.

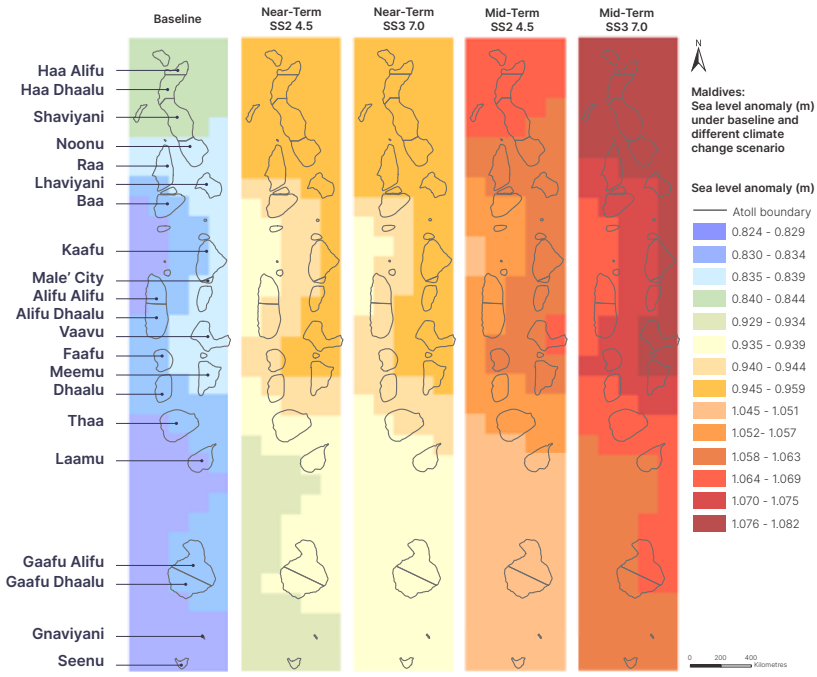


Figure 2.2a. Sea-level anomaly in the Maldives under baseline and different climate change scenarios

Sources: ESCAP calculations based on IPCC Interactive Atlas, 2021; Copernicus Climate Change Service, Climate Data Store, 2018 and Ministry of Environment, Climate Change and Technology, Govt. of Maldives, 2016.

Notes:

1. Sea level anomaly referes to the height of water over the mean sea surface.
2. The baseline period is 2014.
3. Near-term period is 2021-2040.
4. Mid-term period is 2041-2060.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

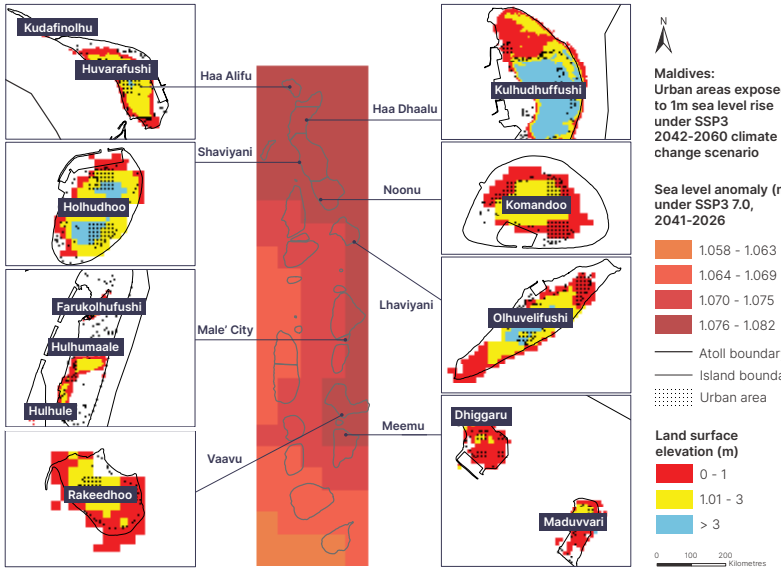


Figure 2.2b. Urban areas exposed to 1m sea-level rise under SSP3 climate change scenario in the Maldives

Sources: ESCAP calculations based on IPCC Interactive Atlas, 2021; Copernicus Climate Change Service, Climate Data Store, 2018 CoastalDEM 30TM (v2.1), 2021, ESRI basemap and Ministry of Environment, Climate Change and Technology, Govt. of Maldives, 2016.

Notes:
The baseline period is 2014.

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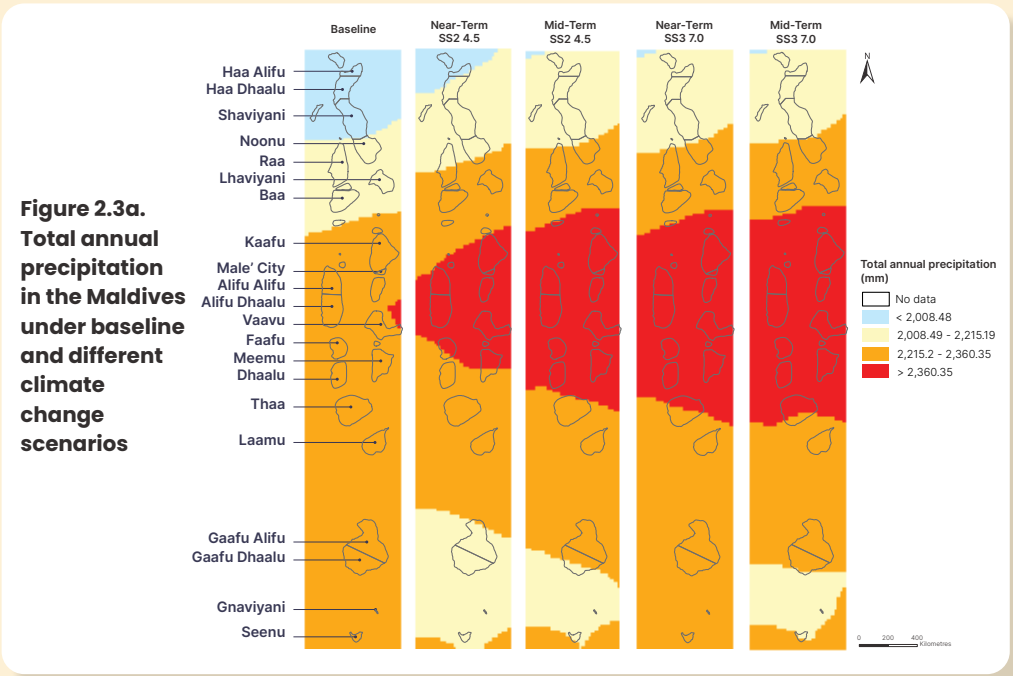


Figure 2.3a. Total annual precipitation in the Maldives under baseline and different climate change scenarios

Sources: Asia-Pacific Climate Change Adaptation Inforamation Platform (AP-Plat), 2023 and Ministry of Environment, Climate Change and Technology, Govt. of Maldives, 2016.

Notes:
1. The baseline period is 1981–2000.
2. Near-term period is 2021-2040.
3. Mid-term period is 2041-2060.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

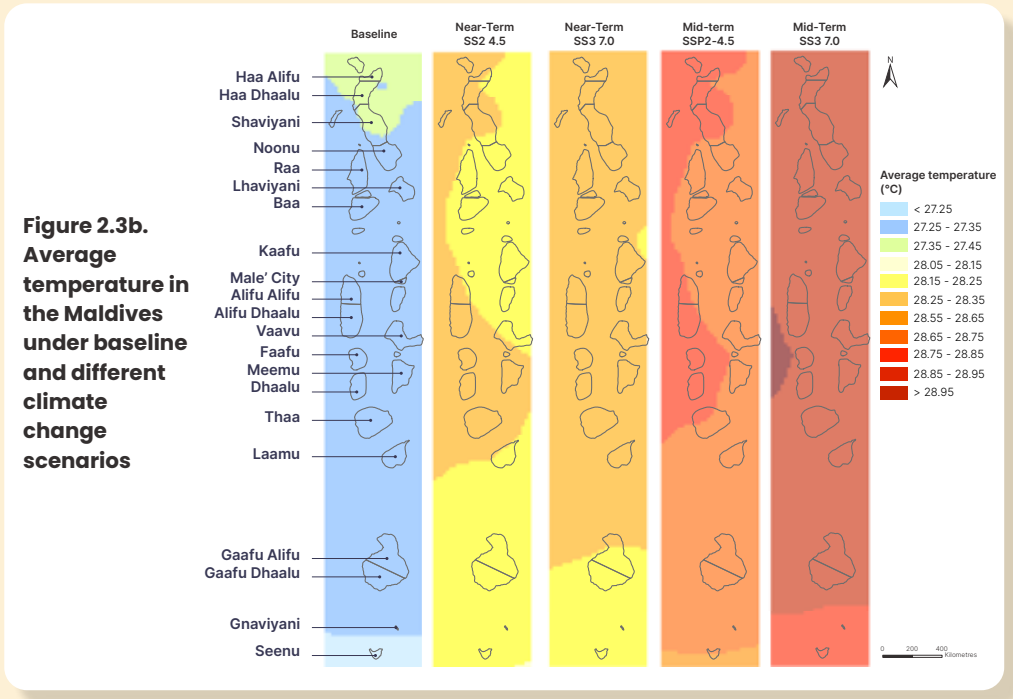


Figure 2.3b. Average temperature in the Maldives under baseline and different climate change scenarios

Sources: Asia-Pacific Climate Change Adaptation Inforamation Platform (AP-Plat), 2023 and Ministry of Environment, Climate Change and Technology, Govt. of Maldives, 2016.

Notes:
1. The baseline period is 1981–2000.
2. Near–term period is 2021-2040.
3. Mid–term period is 2041–2060.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Using climate projection data with a 5 km spatial resolution downscaled from the IPCC AR6 global data by the Asia-Pacific Climate Change Adaptation Information Platform (AP-Plat), ESCAP has conducted a granular risk assessment of climate change, including for floods and droughts.

By using a downscaled climate projection data, it is possible to identify risk hotspots that are emerging, intensifying and changing under different climate scenarios, which enables a more granular exposure calculation, mobilization of resources and targeted policymaking to build resilience at the subnational level. The ongoing project in Maldives is demonstrative of the global Early Warning for All Initiative (EW4All) pillar 1 on disaster risk knowledge.

The scaling of urban farming initiatives across cities and towns in Asia and the Pacific is also being increasingly recognized as part of a suite of urban nature-based solutions that agglomerate co-benefits of food security and economic livelihoods with urban biodiversity, cooling and water retention benefits (Frantzeskaki and others, 2019; Zari and others, 2019). Best practice examples include the Hong Kong Rooftop Republic, the Singapore Food Security Roadmap and the subsequently established Singapore Food Agency (Diehl and others, 2020). The removal of the Cheonggyecheon highway in Seoul to reduce transport emissions while improving urban cooling and floodwater management remains one of the most globally recognizable examples of transformative urban resilience that has integrated ecosystem restoration with mitigation and adaptation principles (Robinson and others, 2022).

Coping with concurrent climate shocks

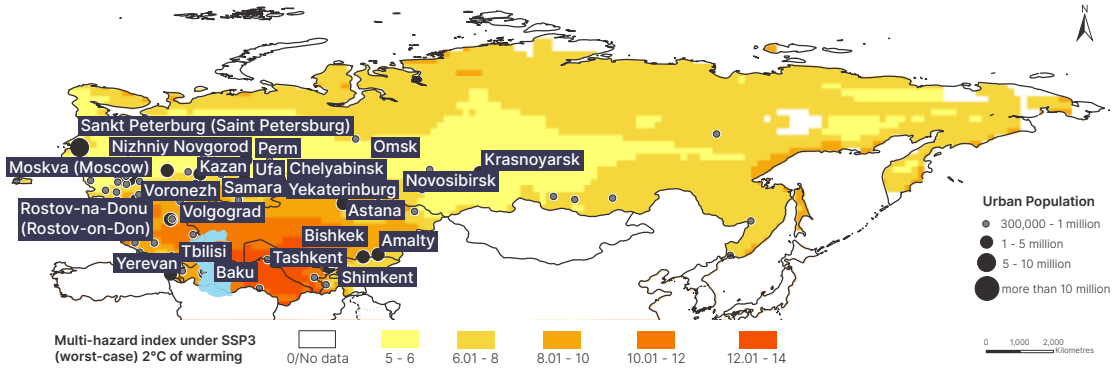
Sea-level rise results from the disruption of climatic systems caused by the rise in anthropogenic greenhouse gas emissions. However, it is the multiplicity of regionally specific short-term shocks and long-term stressors – as well as their interaction – that continues to confound urban decision makers, experts and relevant actors. The strong correlation between cities in Asia and the Pacific and low-lying and coastal areas has led to a significant focus on projected and observed sea-level rise in the region, alongside efforts to quantify the relative exposures and risks faced by these urban areas (Nunn, Smith and Eldrick-Barr, 2021; Rollins, Wheeler and Frazier, 2022). This is particularly the case in the Pacific, where IPCC notes that "67 per cent of infrastructure is located within 500 m of coastline, commercial, public and industrial infrastructures are particularly vulnerable due to the location of urban centres" (Mycoo and others, 2022). In the case of coastal settlements, their proximity to the ocean exacerbates other impacts, for instance, compounding the ingress of storm surges, and worsening erosion and the degradation of buildings due to saline ingress.

© beau - Boats tied on the dock along the riverbank of the Thu Bon River in the Old Quarter of Hoi An (Hội An)

Box 2.3. Multi-hazard disaster risks of cities in North and Central Asia

According to ESCAP calculations based on IPCC AR6 global climate projection data on multi-hazard, Turkmenistan, Uzbekistan, Kazakhstan and the southern region of the Russian Federation will be exposed to higher risk of natural disasters exacerbated by climate change. Under a 2-degree warming scenario, several cities in the North and Central Asia region with a high urban population, including Ashgabat, Nukus, Samarkand and Rostov-on Don, are exposed to higher risk.

Figure 2.4 Urban population exposure to multi-hazard risk under SSP3 2 °C warming scenario in North and Central Asia



Sources: ESCAP calculations based on IPCC WGI Interactive Atlas - Coupled Model Intercomparison Project Phase 6 (CMIP6) 2021, Urban Agglomeration Population for 2020 and UN Geospatial.
been agreed upon by the parties.

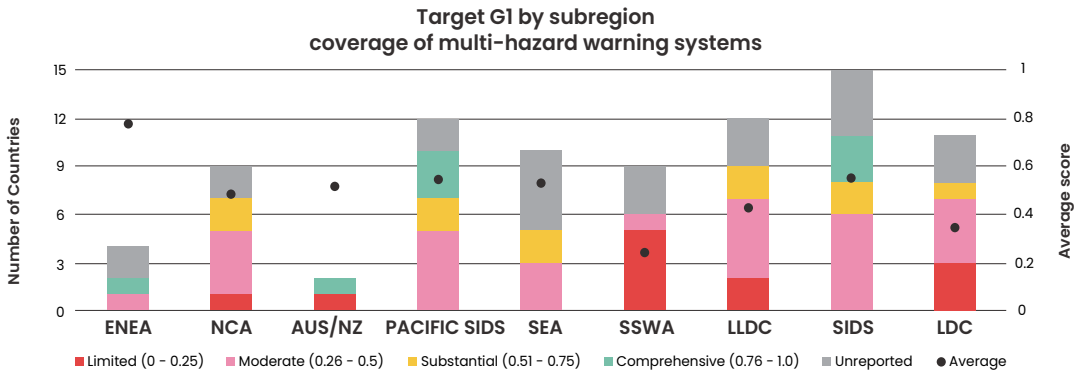
Notes: Multi-hazard data consist of
1) Annual consecutive dry days
2) Annual maximum 5-day precipitation
3) Annual surface wind and
4) Annual davs with maximum temperature more than 35°C.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not vet been agreed upon by the parties.

(Urban areas of North and Central Asia exposed to intensifying and expanding multi-hazard risk under SSP3 scenario, 2 °C warming)

To build resilience, cities need to first understand the specific risks, such as drought, flood, storms and heatwaves, which are emerging and intensifying. Once the risks are better understood, an effective multi-hazard early warning service is one of the most cost-effective climate adaptation methods to save lives and livelihoods. According to the target G score of the Sendai Framework, which measures the availability and access to early warning systems, among the countries in North and Central Asia, no country has reported having a comprehensive level of a multi-hazard early warning system in place and a majority of the countries reported having a moderate or limited level of early warnings coverage (UNDRR and WMO, 2022). Cities in North and Central Asia and in the wider Asia and the Pacific region can build resilience to climate change by sharing knowledge to build climate risk knowledge and share best practices, including through improving the early warning services compatible with infrastructure and population density of urban cities by improving on Sendai Framework reporting and making progress in improving the early warning systems.

Figure 2.5 Target G1 by subregion (coverage of multi-hazard warning systems)



Notes: ENEA, East and North-Asia; NCA, North and Central Asia; AUS/NZ; Australia/New Zealand; SIDS; Small island developing States; SSWA, South and South-West Asia; LLDC, landlocked developing countries; LDC, least developed countries.

The intersection of long-term changes with short-term shocks is proving to be especially challenging for cities across the region. Heatwaves with higher maximum and overnight minimum temperatures – over longer periods of time – are affecting cities and towns across Asia and the Pacific on a more frequent basis, being compounded by the Urban Heat Island Effect – when urban areas experience higher temperatures than their surrounding areas due to human activities, and urbanization can increase nighttime urban temperatures by more than 4°C (Bosomworth, Trundle and McEvoy, 2013). Analysis of daytime temperature differences in some of the cities in South and South-West Asia were even larger; a study covering Kathmandu, New Delhi and Dhaka indicated that temperatures in the city centre areas were more than 10°C higher than their peri-urban surroundings (Maharjan and others, 2021). Climate change is also causing heatwave-associated morbidity and mortality in cities and towns well outside of historical areas of exposure, such as in Hobart in the far south of Australia, where emergency response systems are not designed to address these hazards (White and others, 2016).

The inequality of these impacts on disaggregated urban subgroups demonstrates the importance of targeting actions and policies on a needs basis that is consistent with the Sustainable Development Goals ethic of "leaving no-one behind". Numerous studies, for example, have highlighted the additional and overlooked climate risks faced by urban dwellers engaged in caregiving, who are overwhelmingly women (Sogani and Viswanathan, 2020). However, it is the intersectionality of these additional or varied climate vulnerabilities that compounds urban inequalities. For instance, failure to adequately consider the gendered nature of not only housing tenure, but also peri-urban food harvesting and gardening in Pacific island urban contexts has been found to exacerbate risks of gender-based violence and worsen families' capacities to provide education and childcare (Butcher, Acuto and Trundle, 2021). This was further worsened during the COVID-19 pandemic, during which urban households became more dependent on alternative food sources due to the economic impacts of lockdowns (Lese and others, 2021).

As noted in IPCC AR6, Asia and the Pacific encompasses every climate zone identified globally, from tropical to polar (Shaw and others, 2022). As a result, there is no "one size fits all" approach to adaptation for the region's cities and towns. The IPCC report does, however, note that adaptation in Asian cities is particularly challenging due to the uneven nature of economic development across the region and associated issues of inequality, with rapid land-use change and densification further confounding climate signals with direct environmental pressures – such as land subsidence, as is the case in Jakarta (Shaw and others, 2022). Asia and the Pacific has some of the world's largest informal settlement areas, as well as cities with some of the highest share of informal inhabitants globally. This adds further complexity to adaptation planning measures, limiting the capacity for local and national governments to intervene effectively in these areas (French and others, 2021).

The prevalence of informal settlements is often noted to be a key challenge for local governments to implement effective urban adaptation action in the region, particularly in countries with special needs.

The prevalence of informal settlements is often noted to be a key challenge for local governments to implement effective urban adaptation action in the region, particularly in countries with special needs. As noted in the IPCC report, in Samoa, "several national-level programs on adaptation have had difficulties in engaging with the local level even if the decision-making powers on actual land management sit within the communities" (Mycoo and others, 2022). However, it is also recognized that extensive latent adaptation capacities are held outside of government control, with endogenous forms of resilience already widely deployed by communities – including those living informally – in response to climate disasters across the region (Regenvanu, 2010; Trundle, Barth and McEnoy, 2019; Usamah and others, 2014).

In an analysis of their sub-national reporting database, the Carbon Disclosure Project reviewed the climate actions of more than 800 cities globally, with a collective population of more than 800 million across 84 countries (Carbon Disclosure Project, 2021). In addition to mitigation actions, more than 459 cities reported having developed an adaptation plan, with more than 3,400 adaptation actions inventoried. The top five areas of action globally were grouped into urban greening, community engagement, disaster preparedness, flood mapping and hazard resistant infrastructure design. Cities in Asia, however, focused more heavily on flood defenses and projects and policies targeting vulnerable citizens, while cities in the Pacific tended to include sea-level rise modelling and heat and thermal imaging alongside flood mapping, and more widely implemented storm water capture systems (Carbon Disclosure Product, 2021).

Advancing low-carbon and climate resilient cities

To mitigate and adapt to the impact of climate change, cities must invest in low-carbon development, strengthen climate resilience and be prepared for the consequences of higher temperatures and heavier precipitation. As such, key recommendations are as follows.

Key Recommendations

Integrate urban communities as key actors to build resilience against climate and other shocks

Building urban climate resilience must draw on the capacity that substantively exists outside of the direct control of both national and local governments (Trundle, Barth and McEnoy, 2019). Instead, it currently draws on functions, networks and latent capacities of the vast array of institutions – informal and formal – that constitute the modern city. At the core of these decentralized, but interconnected, communities are the networks of households that ground the lived experiences of urban citizens. While the cities of the Asia-Pacific region are profoundly diverse in nature, the critical function of communities in building urban climate resilience is evidenced both across the region and globally (Mitchell and others, 2021). Governments need to take more proactive measures to integrate urban communities, especially those that are most vulnerable to the impacts of climate change, in identifying and implementing adaptation measures.

Urban governance and sustainable urban development initiatives must better reflect their position as facilitators of climate-resilient development, rather than just being the exclusive providers and arbiters of this heavily value-based understanding of what must inevitably be a deeply transformative reconfiguration of urban systems, a process that will ultimately result in a significant redistribution of resources, rights and power. In doing so, the state has the critical role of moderating this process in an equitable and ethical manner in order to ensure that no urban citizen is left behind (Leavesley and others, 2022).

Cities – their governments, and their citizens – provide an ideal testbed for local adaptation initiatives capable of drawing on vast resources to develop and implement innovative adaptation actions. However, in doing so, actions must reflect a wider vision of climate justice and urban rights if efforts are to address the entrenchment of inequality that is heavily intertwined with the climate crisis. To this end, it is necessary to incorporate considerations of rights and justice, addressing those most vulnerable and at risk in an equitable manner (Ziervogel and others, 2017). It is this negotiation of the forms of urban resilience that are adopted through transformative people-centered processes driven by a crisis that will have the most substantial impact on the sustainability of the cities and towns of the Asia-Pacific region to truly leave no urban citizen behind.

Deploy innovative urban adaptation pathways to address existing and new climate risks

To progress beyond current crises scenarios, innovative adaptation pathways are needed. Urban adaptation pathways continue to be envisioned based on historical pathways. Cities have become highly dependent on fossil fuel, and their growth has relied on inequitable extraction of resources and human labour from the Global South, including from much of the Asia-Pacific region. This entrenched inequality drives global calls for climate justice, as well as the emergent loss and damage mechanism. However, the diversity of urban configurations in the Asia-Pacific region highlights both the non-linearity of urban development, and the critical role that urban experimentation and innovation must play in transforming cities and towns in order to cope with the known and unknown shocks and stresses of the twenty-first century.

The cities and towns of Asia and the Pacific, including areas of informality that operate outside of these assumed urban "norms" offer a vast opportunity for rethinking climate resilience. Examples include proposals to redesign cities around customary land tenure systems, build disaster response mechanisms through community governance structures, adapt traditional knowledge in urban design and redeploy ecosystem-based adaptation within cities and towns. Consideration of these alternative urban adaptation pathways is fundamental to the ethic of just transitions, whereby existing imbalances of power and historical inequalities occurring in the distribution of resources and decision-making are reconfigured as part of the response to the climate crisis.

Assumptions of "best practice" urban governance tend to support the homogenization of urban governance and planning processes, reinforced by globalized practices and industries engaged in urban development and design. This agglomeration of urbanism contradicts a fundamental tenet of resilience thinking, whereby redundancies can be drawn on as a function of diverse and differentiated system capacities, elements that have enabled the functional reconfiguration and – ultimately – the sustainability of cities and towns through the massive upheavals of the industrial and modern ages. By enabling these alternative urban development pathways, it is far more likely that efforts to realize the Sustainable Development Goals and avert much of the climate crisis might succeed.

Enhance data collection and local evidence to inform and accelerate climate action in cities

To enhance evidence-based action, decisions aiming to mitigate greenhouse gas emissions and reduce vulnerability to climate shocks must be informed by local data and information that have an accepted scientific quality. Some countries still lack reliable information on national and local emissions. Strengthened technical cooperation could provide support to develop national and local emissions inventories for effective climate action and facilitate open access to and use of monitoring data, including through satellite-generated data and open-source data.

Similarly, for community-owned responses to increasing climate risks to be effective, dialogues, knowledge-sharing and capacity-building at the community level to support robust data collection and analysis are needed. Communities often possess knowledge and insights on adaptation and mitigation measures based on experience. Furthermore, preparation of city-level assessments and data collection on climate vulnerability, including informal settlements, are key. These support strategic planning on climate change and regular risk assessments, vulnerability assessments to climate changes, geographic information system (GIS) hazard mapping and city resilience profiles, early warning systems, recovery plans and the provision of technical support from international networks and programmes.

Shift to low-carbon sources to tackle the urban energy crisis

The transition to low-carbon development is necessary to not only mitigate the impacts of climate change resulting in increased energy use for heating and cooling, but also to support sustainable development and reduce the greater strain on cost of living stresses placed on households. Development of comprehensive urban energy strategies, including low-carbon pledges with defined road maps and milestones that draw on good practices are critical. These could also include incentives for the uptake of renewable and low emission energy sources through local and global financial mechanisms, such as carbon pricing and eco-budgeting, as well as efficiency measures, such as city climate planning and low-carbon public transport.

More sustainable patterns of consumption and production can be achieved through a variety of measures, such as through increased uptake of renewable or low-carbon energy sources, energy-efficient construction and design in the construction sector. This also includes the enforcement of carbon tariffs and emission codes and planning strategies, for example, transit-oriented development that facilitates the use of public or non-motorized transport. These initiatives are, therefore, an essential element in reducing the contribution of urban areas to climate change and other negative environmental impacts.

Public, private and civil society stakeholders each have a critical role to play in supporting the low-carbon transition. By collaborating and leveraging their strengths, they can collectively advance local low-carbon development, foster sustainability and address the challenges of climate change and environmental sustainability effectively.

Provide platforms for monitoring, reporting, verifying and integrating multilevel climate action

The urban dimensions of nationally focused climate frameworks are increasingly becoming more explicit within the remit of organizations, reporting and funding mechanisms. At the city scale, many cities are also looking “upward” to national and multilateral levels to identify opportunities to leverage finance, partners and share lessons learned, and to resolve key policy and regulatory barriers in transitioning to low-carbon economies and addressing climate risk.

These efforts, however, are largely ad hoc and emergent, and difficult to aggregate in a consistent and effective manner, presenting barriers to vertical integration and horizontal comparison and knowledge-sharing. By advocating, designing and ideally providing platforms built on an agreed and standardized framework (ranging from reporting procedures to requirements for metadata and transparency), efforts to take climate action through localized frameworks, such as voluntary local and subnational review reports (VLRs and VSRs) and regionally and locally determined contributions (RLDCs) can be considered at the regional scale.

Harmonize and enhance nature into cities to address climate, clean air and biodiversity crisis

To enhance the quality of life in cities and respond to multiple crises, approaches that harmonize nature and enhance its presence in cities must be adopted. The global climate crisis is heavily intertwined with the global biodiversity crisis, with the impact of urban areas on habitat destruction extending well beyond peri-urban hinterlands into the vast food and material production systems on which urban populations depend (Knapp and others, 2021). The isolation of urban citizens from the destructive outcomes of these supply chains limits the ability to offer incentives for behavioural change, that negatively impact human health, well-being and the liveability of cities themselves (Trundle and McEvoy, 2016). These compounding impacts include inactive lifestyles and respiratory damage due to poor air quality, which lead to increased morbidity and mortality resulting from the Urban Heat Island effect. At a macro scale, these processes – considered collectively – are contributing to what is increasingly being referred to as the sixth mass extinction.

The reintegration of nature into all aspects of urban design, planning and development offers an opportunity to recalibrate urban spaces so that norms of human habitation can be reconfigured through technological adaptation and modification of natural environments. The importance of this reconfiguration and rethinking of urban environments is reflected in its focus as a stand-alone target within the Kunming-Montreal Global Biodiversity Framework under which target 12 aims to "significantly increase the area and quality, and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas" by 2030. Such efforts can also create co-benefits that can help address the climate crisis at the local scale.

Nature-based solutions and wider urban applications of ecosystem-based adaptation are emerging rapidly as a suite of low-cost approaches that can be applied and calibrated for urban contexts across Asia and the Pacific. These involve, for example, rooftop urban agriculture to minimize carbon footprints, applications of vetiver grasses and bamboo to riverbanks for flood mitigation and the creation of urban wildlife corridors that reduce urban heat and rainwater runoff. Many of these applications are also more cost effective than heavy or "hard" infrastructure approaches, but they require a rethinking of urban design, and – often – a recalibration of codes, policies, legislation and governance expectations.

In conclusion, the climate transformations that need to be made to our cities require more than technocratic solutions; they must also be imaginative, pluralistic and above all demonstrate care for urban inhabitants, many of whom are being increasingly left further behind by crises and risk falling back further as the climate crisis continues unabated (Waters and others, 2023).

As cities in the region grapple with increasing climate and environmental challenges, digital technologies can play a crucial role in enabling more sustainable, inclusive and agile urban systems, which is the subject of the next chapter.

03

Chapter 03

Urban digital transformation: *linking innovation to inclusion*

Digital innovation is a priority for cities across the Asia-Pacific region, from large globalizing cities to peri-urban areas and expanding towns.

Leveraging digitalization to enhance urban services and built environments, including through "smart" innovation, has become a part of urban policy across the Asia-Pacific region.[9] Many examples of this are already being deployed. Real-time information on traffic improves public safety and reduces air pollution and environmental footprints. Public safety departments use data on criminal activity to adopt better prevention measures. Telemedicine, e-alerts and monitoring help address public health needs; this was especially the case during the COVID-19 pandemic.

Large megalopolises to small towns are experimenting with digital innovation. Digital tools are also being deployed to facilitate public participation in decision-making in many urban governance processes, including planning, community engagement, climate action and housing.

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At the local level, mobile devices have become an important avenue for improving public services, often allowing for instant dissemination of information about public transit, traffic conditions, weather information, safety alerts and neighbourhood events (United Nations Department of Economic and Social Affairs, 2019). These transformations are driving unprecedented levels of digitalization of city services, infrastructures and processes. Critically, these changes are also opening up new opportunities as well as challenges for cities in advancing the implementation of the 2030 Agenda for Sustainable Development. For instance, recent work by McKinsey notes that 70 per cent of the Sustainable Development Goals could be advanced through smart applications and that cities could improve quality of life by between 10 and up to 30 per cent (Woetzel and others, 2018).

For instance, recent work by McKinsey notes that 70 per cent of the Sustainable Development Goals could be advanced through smart applications and that cities could improve quality of life by between 10 and up to 30 per cent.

Similarly, recent analysis of the potential of digital twins[10] in implementing the Sustainable Development Goals has stressed how these innovations could advance identification of key inequalities and overlaps between action agendas (Tzachor and others, 2022).

[9] In this case, "smart" refers to ICTs-enhanced delivery of urban places and services, but as detailed in the chapter, the reader is encouraged to move from this terminology to "digital innovation" instead. For an explanation, see OECD (2019a).

[10] Digital twins are understood as digital representations of an intended or actual real-world physical product, system or process. See Barricelli, Casiraghi and Fogli (2019).

The pandemic has highlighted the importance and urgency of addressing social, economic and technological inequalities haves and have nots (Eruchalu and others, 2021), inordinately limiting access to urban employment, education, health information, and the wider capacity for urban networking and engagement at a critical time. The digital divide has hindered humanitarian responses to climate disasters in the Pacific. It is increasingly recognized that efforts to date have either failed to adequately address or exacerbated existing urban inequalities. Accordingly, a key question is whether digital innovation should be reconciled with the pressing need to ensure future urban development leaves no city behind (Acuto and Parnell, 2016). The landscape of urban digital transformation in the Asia-Pacific region is complex and requires closer examination and more effective coordination, especially at the policy level. Digital innovation should be better aligned with and connected to the opportunities in the region for urban transformation and concurrently address the exclusions and digital divide.

A regional digital transformation

Despite growth in digital connectivity and infrastructure, there is nonetheless an access and utilization gap across the Asia-Pacific region. Information and communications technology (ICT) development has advanced considerably in the region, including broadband connectivity and adoption of digital strategies, policies and plans to build smart cities and societies. While ITU statistics in October 2020 indicate that more than 98 per cent of the population in the region is covered by a mobile network, less than 50 per cent are using the Internet – demonstrating that there is gap between having access to networks and the capacity to effectively use technology (ITU, 2020). Subregionally, 768 million of the children and young people 25 years or younger who lack Internet access live in South Asia (Royal, 2021).

The rise of the digital economy is helping to build momentum for a digital urban transformation. Over the past two decades, the popularity in the Asia-Pacific region of “smart city” themes and digital transformation initiatives has been increasing. The “digital economy” – the economic activity that results from billions of online connections among people, businesses, devices, data and processes (Deloitte, 2023) – is now a sizeable proportion of GDP across most countries in the Asia-Pacific region, including in the South-East Asia subregion. The digital economy is a key driver of the development of digital infrastructure and expanding economic transactions and investments in larger cities across the region. Notably, as reported in the MIT Tech Review, the leading digital economies of South-East Asia likely amounted to $194 billion in 2022, marking a 20 per cent increase from 2021 and indicating robust growth and high digital penetration. A similar performance was also recorded across parts of East Asia (Baijal and others, 2022), with major drivers being concentrated in rapidly urbanizing areas. Smart innovation and the growing momentum of the digital economy have become more deeply entrenched in urban and infrastructure policy by national governments and large private sector entities over the past five years (Asian Infrastructure Investment Bank, 2020). In addition, a thriving academic sector and a burgeoning non-governmental sphere have been promoting direct digital transformations in urban areas across the Asia-Pacific region. The digital transformation can no longer be underestimated by urban policymakers in the Asia-Pacific region.

The digital transformation can no longer be underestimated by urban policymakers in the Asia-Pacific region.

National governments across the Asia-Pacific region are increasingly embracing initiatives that are focused on a "smart" and digital transformation. Among the many compelling examples are the following: India launched the much-reported 100 Smart Cities Mission in 2015, which has now extended into a new cycle; the National 14th Five-Year Plan (2021) of China emphasizes smart innovation and digital villages; the Governments of Japan and the Republic of Korea have established the Japanese Smart City Guidebook and Smart City Korea National policy, respectively; and Singapore holds the unique status as a city-State with global leadership in this area and is thriving to be a "smart nation". An example is the development of HealthCity Novena (Sivaramakrishnan, 2019) – a master plan for community - focused health in which infrastructure, such as pedestrian walkways, underground car parks and outdoor green spaces, exist to complement and ameliorate the citizen-patient experience. Middle-income countries across the region also are developing quickly in this area. For example, Nepal has set an ambitious goal towards smart innovation in peri-urban settings and Viet Nam launched a national framework focused on regulating and building new hubs in 2018.

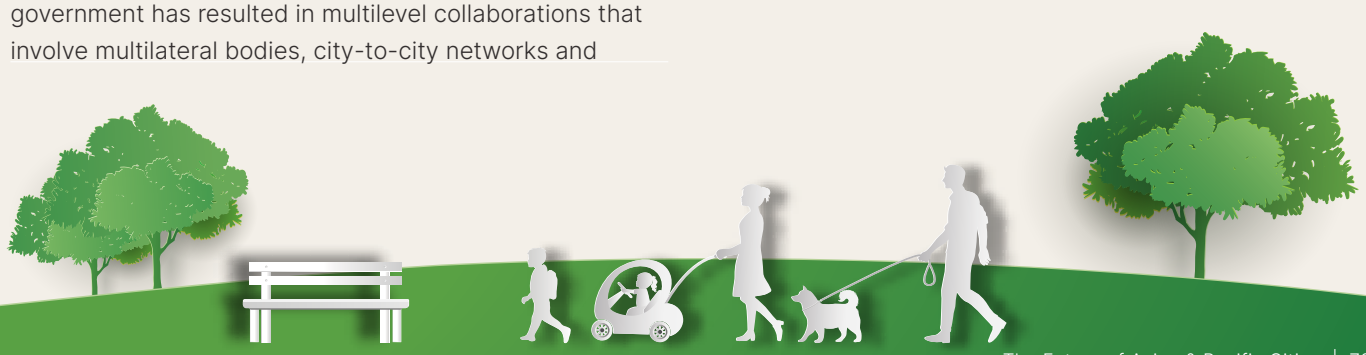
Across the Asia-Pacific region, the private sector has been a major driver of smart innovation and has proactively campaigned for measures that support digital transformation. Critical to this picture has been the rise of major East, South and South-East Asian technology players. This expansion has progressed alongside the consolidation of major international companies operating in the digital private sector. To this end, major urban areas in the ESCAP South, South-East and East Asian subregions are uniquely positioned in terms of co-location with critical digital transformation actors that provide urban innovation "living labs", but also city-university-private sector tripartite experimental hubs. Examples of these are the Smart Shanghai, the UN-Habitat People-Oriented Smart City Programme and the Smart Urban Co-Innovation Lab in Singapore.

The growing degree of entrepreneurial experimentation, coupled with increasing buy-in among national government has resulted in multilevel collaborations that involve multilateral bodies, city-to-city networks and knowledge institutions in a truly "poly-lateral" advocacy for digital transformation. This has been the case of McKinsey, ASEAN and the Government of Singapore advocating the prime positioning of South-East Asia and driving the launch of the pan-regional ASEAN Smart Cities Network in 2018, which covers 26 cities across this subregion. These networked urban digital transformation initiatives are poised to play a key role in tackling diversity, gaps and inequalities across Asia and the Pacific.

Yet, caution when "going digital" is needed, as many social issues can arise in the transformation. For example, Aadhaar, the national biometric digital identity programme of India, has benefited informal workers, such as cab drivers and domestic workers (OECD, 2018), and leveraged entrepreneurial innovations in digital identities to create opportunities for socioeconomic uplift (Shyam, 2021). But the system could also entrench existing cultural inequalities experienced by marginalized workers and lead to more economic inequalities.

While smart innovations offer much promise across the Asia-Pacific region and are advocated explicitly by many key regional players, it should be noted that the transformations take place within complex urban contexts with vulnerability, inequality and marginalization.

While smart innovations offer much promise across the Asia-Pacific region and are advocated explicitly by many key regional players, it should be noted that the transformations take place within complex urban contexts with vulnerability, inequality and marginalization. It is especially important to advocate digital solutions and so-called "smart city" policies that support sustainable urban development and are inclusive, accessible and centred on the needs of the people. Furthermore, special attention should be given to marginalized or vulnerable segments of the population, including women, the elderly, people with disabilities and young people.



A divided region: digital inequalities and innovation nuances

Asia and the Pacific is the most digitally divided region globally. It remains starkly divided when it comes to access to technological advances. ITU stressed in 2023 how nearly 40 per cent of the population remained unconnected or poorly connected to Internet resources, with most recorded non-users disproportionately concentrated in remote communities, and within the female population (ITU, 2023). Recent ESCAP analysis stressed how the Asia-Pacific region is the most digitally divided among the five regions of the United Nations according to the Digital Transformation Index (Jun, Park and Kim, 2021). More nuanced and intersectional understandings of the "digital divide" are needed.

Innovation across the region needs to go hand in hand with an appreciation for diversity of conditions and requires the inclusion diverse viewpoints on "smart" interventions. For instance, age and gender-sensitive digital solutions require closer attention. A recent review of the Specially Designed Zone for Women, rolled out in District 2-2 (Saerom-dong) in the Sejong Smart City of the Republic of Korea, has stressed the limited value that extensive closed-circuit television (CCTV) coverage presents versus other more accessible safety solutions, emphasizing how women often need more active safety systems than passive surveillance systems (Chang and others, 2022).

Box 3.1. The Safetipin app and She Rises framework

Safetipin is a social organization with a long-standing history of successful urban safety enhancement in South Asian, South-East Asian and African cities. The organization's work is focused on three mobile phone applications (My Safetipin, on mobile phones, Safetipin Nite for nighttime data, and Safetipin Site as a web-based platform) all centred around supporting urban dwellers to make safe and informed decisions about enhancing their personal safety as they travel in cities, such as Chennai, Surat or Jakarta. The services and work of Safetipin have focused on promoting inclusion, accessibility and gender-sensitive urban development, leading to the implementation of the principles of inclusivity in its crowdsourcing technologies and safety audits (Viswanath and Basu, 2015). Since its inception in 2013, Safetipin has worked in 45 cities in Asia, Latin America and Africa not only directly with users via its apps, but by supporting safety policy and intervention with governmental and non-governmental organizations that use big data to improve infrastructure and services.

In 2022, Safetipin launched the She RISES (Responsive, Inclusive, Safe & Equitable Cities) Framework for Caring Cities (Mehrotra and others, 2022), which is aimed at further strengthening the deployment of economics and the ethics "of care" at the heart of smart urban innovation. The framework "considers the multiple and intersecting forms of discrimination faced by women in cities", "acknowledges the different experiences and needs of women" and "responds through policies, schemes, services, and laws to promote their enhanced participation in different aspects of urban life". Safetipin as an example of how digital tools, urban innovation and inclusivity with clear gender and intersectional lenses can be implemented effectively to create a tangible change in the region's urban areas.

Source: ADB (2022a).

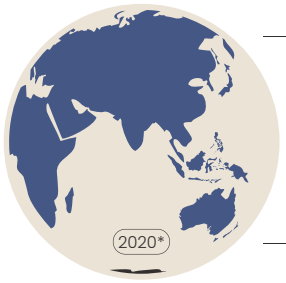
Digital access remains a critical issue across the Asia-Pacific region and requires targeted understanding and solutions. The diversity of digital experiences and challenges across the region is vast and potentially quite bewildering. For example, 90 per cent of the households in Japan have Internet access compared to only approximately 18 per cent of households in Afghanistan.[11] Tangible action on this front is urgent, but it also requires precise and nuanced responses with a clear awareness of local complexities.

Digital access remains a critical issue across the Asia-Pacific region and requires targeted understanding and solutions.

[11]See World Bank Group and ITU indicator dashboard for 2020. Available at https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=JP-AF (accessed on 23 June 2023).

Figure 3.1. Key ICT statistics, Asia-Pacific region, 2017–2019

Mobile network coverage



98.6%

96.1%

94.2%

Internet access and use

Individuals using the internet (%)		Internet access using mobile 88/100 inhabitants		Internet access using fixed 88/100 inhabitants	
2017	2020	2017	2020	2017	2020
38.6%	44.5%	61.7%7	6.6%	12.9%	15%

Household internet and computer access at home, Internet use by young people (15-24 y/old)

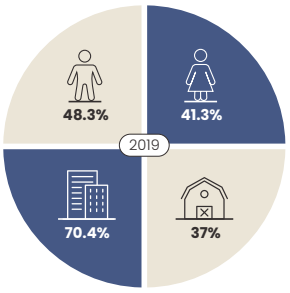
2019

53.4% of households in the Asia-Pacific region had Internet access at home

41.1% of households in the Asia-Pacific region had access to a computer at home

70.3% of 15-24 year olds used the Internet

Digital divide



Population, country classifications, GNI per capita and total telecommunication investment

- The Asia-Pacific region is the most populous region in the world, with 4.2 billion people, most of whom live in rural areas.
- Most countries in the Asia-Pacific region are low- to middle-income economies.
- Fourteen countries in the region are classified by the United Nations as small island developing States (Fiji, the Federated States of Microneisia, Kiribati, Maldives, the Marshall Islands, Nauru, Papa New Guinea, Samoa, Singapore, Solomon Islands, Timor-Leste, Tonga, Tuvalu and Vanuatu), and 11 countries are classified as least developed countries (Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, Lao People's Democratic Republic., Myanmar, Republic of Nepal, Solomon Islands, Timor-Leste and Tuvalu).

- China and India are the largest telecommunication markets in the region, given their population size.
- ITU data show that total telecommunication investments for the region amounted to $103.7 billion in 2018, 77 per cent of which came from China and India.
- According to World Bank data, the average GNI p.c. (Atlas method) of countries in the region (including the high-income countries of Australia, Brunei Darussalam, Japan, the Republic of Korea, New Zealand and Singapore) is $11 369.*
- 20 of the 34 countries in the Asia-Pacific region for which 2019 data were available had a GNI p.c. of less than $5 000
- Only six countries, namely Australia, Brunei Darussalam, Japan, the Republic of Korea, New Zealand and Singapore, had a GNI p.c. in excess of $30 000
- Countries with the lowest GNI p.c. in the region include Afghanistan, Bangladesh, Cambodia, Myanmar, Nepal and Pakistan.

**For GN p.c, countries are selected based on ITU regions, where available. The data used were gathered in 2019. No data were available for the Democratic People's Repubic of Korea. See https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?end=2019&name_desc=false&start=1964*

Sources: ITU WTI Database and World Bank data. Available at https://www.itu.int/hub/publication/d-ind-dig_trends_asp-01-2021/ (accessed on 2 June 2023).

Digital transitions in the region also introduce new vulnerabilities and issues related to resilience. Recent ESCAP work centred on China and India (Liu and Fan, 2022) underlined how while global and regional Internet bandwidth rose sharply (approximately by 35 per cent globally, ranging from 24 per cent in Oceania to 36 per cent in East Asia) during the pandemic, ICT infrastructure resilience and reliability issues have become even more critical for the continuation of businesses (small and informal businesses in particular), governments and education. The study stressed that one of the most critical issues is a deeply urbanized one, with vulnerable groups and informal workers directly threatened by ICT infrastructure disruptions. Hence, the urban complexity of the digital divide gap calls for interventions that, while recognizing the infrastructural basis of digital transformations, also tackle socioeconomic determinants of inequality across the Asia-Pacific region – linking physical and social interventions as already recognized by the United Nations Department of Economic and Social Affairs (van Dijk, 2022). Central across most of the region is the issue of capacity for digital systems and digital innovation.

Digital capacity: innovation across scales

Enhancing the capacity of cities to leverage digital transformations and harness the potential of smart solutions for sustainable urban development are key priorities for the Asia-Pacific region. Local governments can play a central role in addressing data breaches, privacy and data misuse, managing the risk of cyber theft and attacks, dealing with data privacy concerns, and working with technology experts to address identified bias in algorithms through applications in everyday services and urban processes, such as transport, and the regulation of the deployment of smart technologies and in developing inclusive digital urban innovation strategies and visions for their cities and collaborating with various stakeholder, including the private sector, academia and civil society.

Box 3.2. The real-time urban flood forecasting and warning system of Shanghai

A real-time urban flood forecasting and warning system was built for Pudong New District in Shanghai, covering 1,210 km^2 of the rapidly developing urban area east of Huangpu River. The coastal metropolis Shanghai is susceptible to flooding due to its low-lying terrain and massive urbanization, and the location downstream of the large Taihu Basin. Although local water authorities were collecting weather and hydrological data, more intelligent data technologies were needed to help make the right decisions for flood prevention and management.

A digital urban flood forecasting and early warning system was built to integrate all of the data and support water management, enabling flood risk evaluation with just a few clicks. With the help of meteorological forecast estimates, and real-time rainfall and river level data received from stations all over the Pudong New District, rapid forecasting technology allows online monitoring and simulation of flood events, providing a prediction of the scale, timing and location of impending floods. The early warning system improves response management of watershed and flood management agencies, allowing Pudong to optimize utilization of flood management infrastructure, especially where there is limited flood carrying service capabilities of existing infrastructure.

Source: ADB (2021).

National and local governments need to align their commitments with inclusive digital innovation in order to take substantial steps to scale up the digital availability to billions of urban dwellers. In fact, focusing on the governmental dimension of digital urban transformation reveals substantial needs for legal, regulatory and data privacy reforms. In these areas, capacity is often inadequate and raises issues of effectiveness, fairness and accessibility across the region.

National and local governments can also benefit from aligning their action-oriented multilateral global and regional commitments and networks to implement an effective and inclusive digital change. For example, the G20 Global Smart Cities Alliance is establishing global policy norms for data collection and use, transparency, and public trust with champions across the ESCAP membership, including Gaziantep in Türkiye, Hyderabad in India and Kakogawa in Japan. At the second session of the UN-Habitat Assembly, held in Nairobi from 5 to 9 June 2023, member States agreed to set off a global, inclusive process to formulate guidelines on people-centred smart cities. ESCAP is also supporting the development of regional and national smart city guidelines to promote greater integration and leverage best practices across the region. This vertical alignment can complement important advancements made in the region by local innovators and the increasing degree of urban entrepreneurship and bottom-up change abreast in the region.

In the 2019 *Cities as Epicenters of Digitalization* (Pedersen and others, 2019), it was stressed that the Asian cities that have made the greatest and most sustainable progress have done so by developing well-coordinated public-private partnerships. They have focused on developing innovative ecosystems that underpin digital transformations, not just their relative success. For example, the fintech sector of Hangzhou is benefiting from the presence of Alibaba in attracting top talent to the city. The Alibaba Global Leadership Academy expands the knowledge pool and international connectivity within the Hangzhou workforce. The city government further supports the expansion of fintech by partnering with local research institutions, such as Zhejiang University, and by "establishing a strong international presence" through events, such as the G20 Summit. Hangzhou is among many Chinese cities offering incentives to attract and retain talent, including housing subsidies for foreign graduates and attractive loans for individuals and businesses (Pedersen and others, 2019).

Young people, who are considered to be digital natives, are commonly expected to benefit from digital transformation more than any other age group. Cities, such as Hanoi, Jakarta and Manila, have underscored the critical but untapped potential in which the presence of a very high proportion of young workers in urban areas could allow for significant step changes in the digitalization of urban innovation if paired with a very clear inclusion and youth-led viewpoint. For example, the United Nations Conference on Trade and Development (UNCTAD) first Pacific edition of its regular Digital Economy Report has stressed this opportunity with a focus on the Pacific subregion. The Pacific Digital Economy Programme, has underlined the centrality of urban development, the development of greater digital capacity in young people and the need to advance inclusive digital innovation. Overall, this speaks to the cross-regional need for a more strategic, systemic, and networked role of key urban stakeholders in setting the direction of digital aspirations and innovations at the country level and embedding these in national urban policies.

Overall, this speaks to the cross-regional need for a more strategic, systemic and networked role of key urban stakeholders in setting the direction of digital aspirations and innovations at the country level and embedding these in national urban policies.

As stated by ADB, digital entrepreneurship by small and medium-sized urban enterprises across the region, even in its poorest and most disadvantaged urban areas helped keep economies afloat during COVID-19 and has proven to be a major engine of growth in the post-pandemic era (Park and others, 2022).

The diversity of economies in developing countries across the Asia-Pacific region has reached a development stage under which the private sector typically assumes a larger role in economic growth (ADB, 2021c). Yet, the government's role remains vital in providing an enabling environment for private enterprise. Rapid growth has transformed the region into being comprised predominantly of middle-income countries in which sustaining rapid growth becomes harder than for low-income countries. Recognition of this potential has been in place for quite some time in Seoul, Singapore, Tokyo and Shenzhen, with the establishment of a wide number of experimental digital innovation hubs involving major private sector actors and knowledge institutions emerging from grass roots. Urban innovation has a critical role in expanding the degree of digital capacity across the Asia-Pacific region.

Box 3.3. From the City Data Hub to the COVID-19 Data Hub: the response of the Republic of Korea to the COVID-19 Pandemic

Despite the surge in new COVID-19 cases concentrated in diverse parts of the world, the Republic of Korea did not opt for compulsory lockdown measures. Instead, the Government used its existing, and explicitly "smart city" badged, technologies to gather data on the outbreak and respond in a timely and transparent manner, and gained public trust.

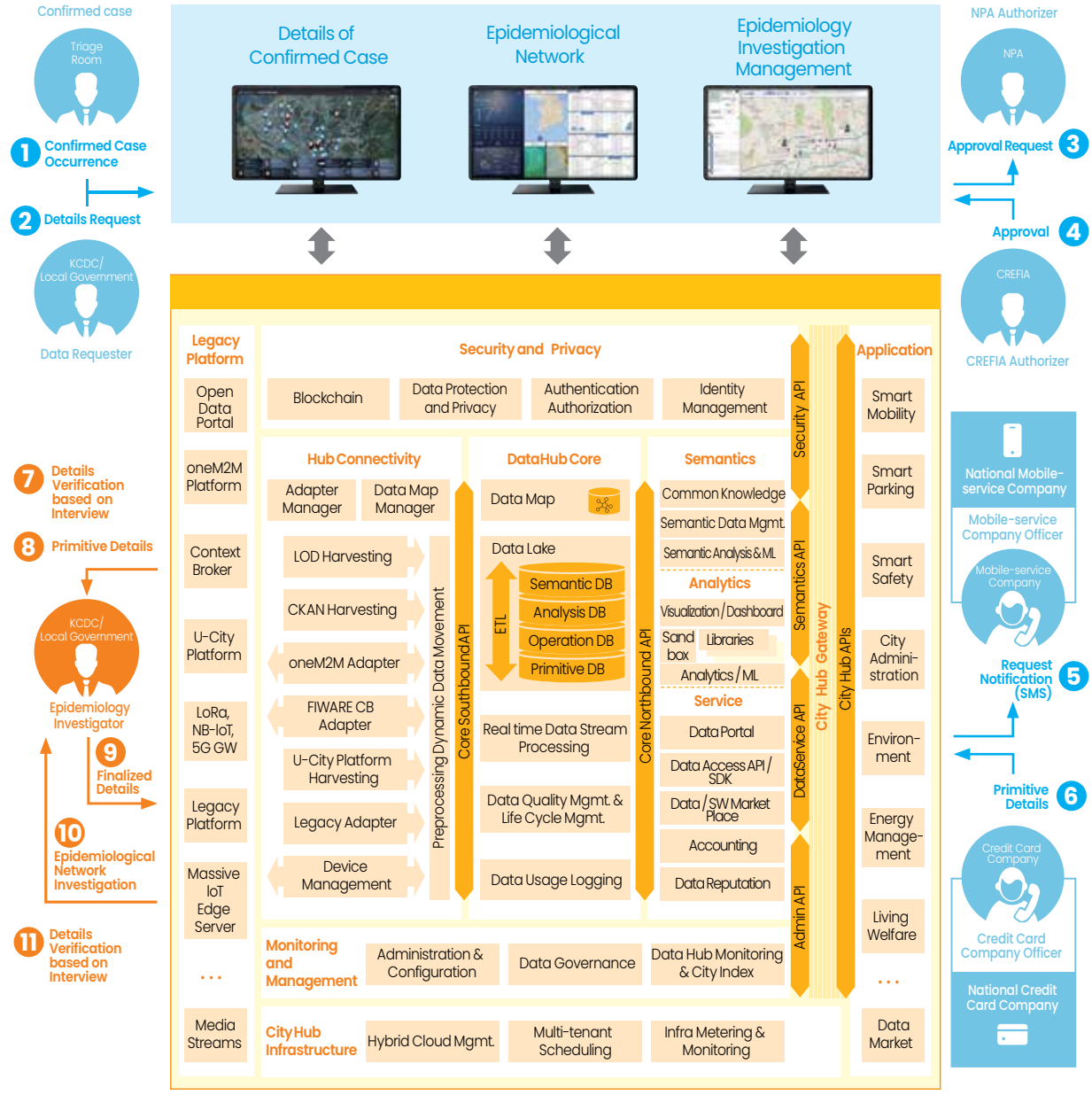
Shortly after the announcement of the first coronavirus contracted case on 20 January 2020, the Government of the Republic of Korea, led by the Ministry of Land, Infrastructure and Transport, in collaboration with the Ministry of Science and ICT and the Korean CDC, launched the COVID-19 Data Platform to track cases. The platform is a descendant of the Smart City Data Hub, a platform originally developed by the Ministry of Land, Infrastructure and Transport under its smart and digital innovation research and development programmes for more efficient management of traffic, energy use, safety and the environment, powered by high-capacity convergence of real-time data. Since 2018, the Smart City Data Hub has been employed by the cities of Daegu and Siheung under the Ministry of Land, Infrastructure and Transport smart city programmes to enhance design and provide urban services (Republic of Korea, Ministry of Land, Infrastructure and Transport, 2020).

Administered by the Korean CDC, the collaborative efforts of the National Police Agency, Credit Finance Association of Korea, three telecommunication companies and twenty-two credit card companies, allowed health authorities to merge data on the digital platform to trace confirmed patients and compare medical consultation reports. Anonymous records of netizens' locations via credit card transactions, mobile phones and CCTVs were provided by service providers and used for the purpose of spatio-temporal mapping of confirmed patients (Son and Lee, 2020). Big data analysis provided real-time data feeds on COVID-19 patients, including their locations and traffic information; thus, detecting cluster infections and mapping the virus transmission route at an early stage of the pandemic (Smart City Korea, 2020).

Despite being formally developed as a tool by the Ministry of Land, Infrastructure and Transport for smart cities' efficient urban planning, the COVID-19 Platform represented a novel approach for handling infectious diseases by enabling automated and swift tracing (10 minutes per case). Compared to manual tracking by health workers, automated tracking of log-in records and centralized coordination of multiple agencies reduced the time needed to trace each confirmed case from one day to less than ten minutes, further enabling health officials to adapt and manage the pandemic more efficiently in lieu of a suddenly increasing workload (Republic of Korea, Ministry of Land, Infrastructure and Transport, 2020).

With a fatality rate of 0.10 per cent (CDC, 2023) of the nationwide confirmed cases, the Government declared the end of COVID-19 as a health emergency on 11 May 2023 (KIM, 2023). The Government's response to the COVID-19 global pandemic served as an example of the joint efforts of several governmental agencies, but also the use of digital technology in containing the national crisis. In the words of the Ministry of Land, Infrastructure and Transport, "smart city technologies can be utilized to meet public needs" (Republic of Korea, Ministry of Land, Infrastructure and Transport, 2020).

Figure 3.2. COVID-19 Epidemiology Investigation System, Republic of Korea



API = application program interface, CKAN = Comprehensive Knowledge Archive Network, COVID-19 = coronavirus disease, CREFIA = the Credit Finance Association, DB = database, GW = gigawatt, IoT = Internet of Things, KCDC = Korea Centers for Disease Control and Prevention, LOD = linked open data, ML = machine learning, NPA = National Policy Agency, SDK = software development kit, SMS = Smart Management System, SW = software.

Source: Ministry of Land, Infrastructure and Transport (2020).

Fostering urban digital opportunities

Digital transformation requires a comprehensive and people-centred approach that ensures coverage and access to all, complemented by an increase in skills and capacities, and clearly defined objectives in the deployment of technologies. As such, related key recommendations are as follows.

Key Recommendations

Develop people-centred national smart-city policies as an enabler of inclusive and sustainable urban development

To develop people-centred national smart-city policies as an enabler of inclusive sustainable development, collaboration, and partnerships among cities, governments, countries, the private sector and civil society are essential. National smart-city policies should be a priority of governments. These policies will enable them to significantly improve urban services, enhance sustainability and promote economic growth in a more coordinated and inclusive manner, and establish a strong national vision and an enabling framework for urban digital transformations, including for digital public technologies.

Several recent analyses pointed to the great potential to leverage digital public technologies (Ingram, McArthur and Vora, 2022) to accelerate efforts aimed at realizing the Sustainable Development Goals. This requires proactive digital innovation combined with monitoring progress towards achieving the Sustainable Development Goals by Asia and the Pacific cities. East and South-East Asia has demonstrated increased productivity through "smart" interventions that scales sustainable urban development. This is superimposed on an opportunity to scale not just "up" (to countries and multilateral processes) but also "down" (to local, precinct and neighbourhood scale) and "out" (to other cities) to many digitally minded cities. This includes scaling the commitments across the region in Sustainable Development Goals-focused initiatives, such as the Digital Public Goods Charter by the Digital Impact Alliance and the United Nations Development Programme (UNDP) (UNDP, 2023). As proposed in this chapter, networked city initiatives with clear buy-in from government as well as engagement with the private sector can have powerful transformative effects. Yet, these initiatives need to better connect to recognize the value of bottom-up non-governmental initiatives, and the potential that city-university collaborations have in advancing inclusive and transferrable digital urban innovation (Acuto, 2018).

Enhance capacities of governments at all levels to design and implement inclusive digital strategies with a clear resilience mindset

To leverage inclusive digital innovation strategies for improved resilience at the city level requires resources and capacity-building. Effective provision of capacity-building can align local strategies with national policy and enable technical assistance for the application of people-centred digital urban innovation "solutions"' and programmes that are focused on improving the quality of life of residents. Digital solutions are enabling tools in the overall package.

A recent World Economic Forum report (Xu and others, 2022) in which the challenges and needs of small and medium-sized cities undergoing digital transformation in China, Japan, Brazil and Singapore were compared listed the following as critical capacity gaps for intermediary urban areas: lack of digital talent; insufficient funds and resources; lack of understanding and application of digital technologies; and lack of intercity interaction and cooperation mechanisms. In the report, however, it was also stressed that towns and peri-urban areas were comparatively better able to leapfrog digital innovation if carefully planned for and supported adequately by investment, especially at the national level.

Promote citizen engagement and multi-stakeholder partnerships for digital transformations in cities

To achieve digital transformation in cities that contribute to sustainable urban development, greater efficiencies and quality of life, digital policies and solutions must engage citizens and relevant public and private actors across the innovation ecosystem, from startups to large technology firms. The Asia-Pacific region presents a vast field of diverse digital capacity, infrastructure and resilience conditions. However, courtesy of widespread national government buy-in, a thriving private sector, ground-up digital entrepreneurship scene and increasingly well-established knowledge institutions, the region also presents a fertile ground to develop effective innovations with an inclusion mindset.

To this end, a key dimension of positive and cross-regional change also comes with how effectively the "smart cities" concept and positioning has progressively shifted into a more collaborative viewpoint on shared digital innovation pathways and benefits. This is an essential issue in reframing the digital opportunity. While numerous discussions about smart innovation have competitive dynamics, as a "digital race for the future" (Huawei, 2022; 2023), progressive calls for pan-regional and cross-country digital innovation collaboration and subregional partnerships for urban digital transformation have emerged and perhaps present the best avenue to achieving an inclusive digital transformation and ensuring "no city is left behind".

In conclusion, as cities in the Asia-Pacific region embrace digital technologies and smart infrastructure, significant investments to build the necessary digital infrastructure and upgrade existing systems are needed. Addressing the financing needs becomes a critical factor in enabling sustainable and inclusive development across Asia-Pacific cities, which is the subject of the next chapter.

04

Chapter 04

Urban finance during turbulent times

The COVID-19 pandemic has had a profound impact on urban finance in Asia and the Pacific.

The region's cities, known for their bustling economies and vibrant financial sectors, were significantly disrupted as lockdowns and travel restrictions brought economic activities to a standstill. The closure of businesses, reduced consumer spending and disruption of global supply chains led to a sharp decline in revenue for local governments and a rise in unemployment rates. The loss of tax revenue and increased expenditure on health care and social support further strained the financial resources of cities, exacerbating budget deficits. Governments implemented various measures to mitigate the economic fallout, including stimulus packages, financial aid to businesses and tax breaks. Additionally, cities had to reassess their long-term financial strategies, including urban development plans, infrastructure investments and debt management. Cities in the Asia-Pacific region are navigating the challenges of economic recovery and financial models to build resilience for the future.

Cities in the Asia-Pacific region are navigating the challenges of economic recovery and financial models to build resilience for the future.

Many governments resorted to borrowing and increased public debt to finance relief measures, which will have long-term implications for cities. The pandemic also altered consumer behaviour as their inhabitants reduced spending on non-essential items and instead, focused on essential goods and services. This change in spending patterns affected businesses and tax revenue, which in turn, affected urban finance. To mitigate the spread of the virus, there was an increased emphasis on contactless payments and digital transactions. This shift has affected traditional cash-based businesses and revenue collection methods, requiring adjustments in urban financial systems.

The post-pandemic urban transformation in the Asia-Pacific region is intended to make cities affordable and liveable, and also climate resilient. How can urban finance support this transformation? The urban infrastructure investment needs in Asia and the Pacific are large and cannot be met by any single source. As per the climate-adjusted estimates of ADB, countries in the Asia-Pacific region need $26 trillion for the period 2016–2030. Broken down by sector, investment is needed for the power sector ($14.7 trillion), transport sector ($8.3 trillion), telecommunications sector ($2.3 trillion), and water and sanitation sector ($802 billion). In addition, $41 billion is needed for climate adaptation and $200 billion for mitigation annually (ADB, 2017). This does not include social sector-related investments in education, health care and housing, or areas where there are substantial unmet needs, especially in terms of providing these social services at the requisite quality. The estimated annual gap in major physical infrastructure sectors is $459 billion or 2.4 per cent of the region's GDP. The infrastructure gap of China is $151 billion, followed by India at $144 billion and Indonesia at $51 billion (ADB, 2017). This implies that countries will need to increase investments in infrastructure by at least 50 per cent.

Creative action is essential if this investment is to occur in time to meet the Sustainable Development Goals timeline, especially in the post-pandemic period where there is decreasing availability of domestic and international funding for investment. In South Asia, high debt levels, lower foreign reserves and weakened currencies make it difficult for countries to access international capital. Additionally, stringent global financial conditions, complex access modalities and high transaction costs increase debt service costs (World Bank, 2023). Other countries in the Asia-Pacific region are likely to face similar challenges.

The focus of this chapter is on identifying financial strategies that could be effectively applied by local governments to enhance service delivery and infrastructure development that improves quality of life and ensures the economic viability of cities.

The focus of this chapter is on identifying financial strategies that could be effectively applied by local governments to enhance service delivery and infrastructure development that improves quality of life and ensures the economic viability of cities. These strategies must also be sensitive to the fact that the large informal sector continues to be a dominant characteristic of the region, and housing needs to remain affordable and become climate resilient simultaneously.

Leveraging urban finance for a post-pandemic recovery

While cities vary in their functional responsibility and fiscal envelope, most local governments across the Asia-Pacific region are responsible for providing basic services, such as water and sanitation, waste management, stormwater drainage, education and health, and developing and maintaining public assets, such as roads and footpaths, playgrounds, parks and green areas.

The economic disruptions caused by the crisis, including widespread job losses and reduced incomes, have further exacerbated the challenges in accessing affordable housing.

The economic disruptions caused by the crisis, including widespread job losses and reduced incomes, have further exacerbated the challenges in accessing affordable housing (OECD, 2020a). As individuals and families face financial hardships, the demand for affordable housing has increased significantly. However, the pandemic has strained the financial resources of governments and organizations that support affordable housing initiatives. Budget constraints, shifting priorities and reduced revenue streams have made it more challenging to allocate sufficient funds for affordable housing projects and programmes. Additionally, uncertainty and volatility in financial markets during the pandemic have made it more difficult for developers and investors to secure financing for affordable housing projects. As a result, there has been a slowdown in the construction and expansion of affordable housing units, exacerbating the existing shortage of affordable housing options (Deb and others, 2022). The pandemic has underscored the need for increased investment and innovative financing mechanisms to address the growing demand for affordable housing and ensure housing stability for vulnerable populations.

Municipal finance and urban finance are related, but have different focus areas. Municipal finance is required for the financial management and activities of local government based on the area of jurisdiction and involves municipal revenue, expenditures, liabilities and assets. Urban finance is broader in scope. It comprises financing mechanisms used to support larger infrastructure, transportation and housing projects as well as other urban amenities, all of which typically include both public and private financing. Given the multi-crises that cities are operating in, implementing solutions to deal with the impacts of urbanization, climate change and other shocks and stresses require municipal and urban finance solutions to address the unique financial opportunities and challenges that arise in urban areas.

Cities generate revenue through many streams. The revenue streams that support expenditure on urban infrastructure can be grouped into four broad categories: user fees and charges; tax revenue; transfers, grants and subsidies; and public-private partnerships. The mix of these sources varies widely across countries and cities. In addition to operating expenditure, these revenue streams need to support investment and finance borrowing against future cash flows. This is typically divided into two types: general obligation bonds, which have a claim on all types of revenue; and revenue bonds, which are usually tied to a specific source, such as user fees for water supply.

Municipal bonds are a key pathway for cities to raise funding for infrastructure. To access local capital markets, a pooling approach is sometimes used, such as the Bangladesh Municipal Development Fund (2004), the Regional Infrastructure Development Fund in Indonesia (2016) and the Tamil Nadu Water and Sanitation Pooled Funds (2003). These funds pool together grants, debt and equity, and offer it to local governments, city planning and development authorities, housing boards and service utilities on concessional terms, which cannot be obtained directly from the market due to lack of local government capacity and market appetite. Pooled funds can, accordingly, play an important role in making capital available to smaller cities that are typically unable to access them directly from the market.

Box 4.1. A long road to municipal bonds

Local governments, particularly in the Asia-Pacific region, face challenges in accessing capital markets, especially from foreign sources. Among the reasons behind this are limited creditworthiness, lack of local financial transparency, insufficient local revenue, inadequate local regulatory frameworks, lack of local government familiarity with capital markets and perception of higher risk. Concerns about governance, stability and the ability to honour financial obligations can make it difficult for local governments to attract investors who prioritize risk mitigation.

Domestic bond issuance by local governments in the Asia-Pacific region is still in its early stages. This can be attributed to factors, such as insufficient local revenue and inadequate regulatory frameworks. From 2015 to 2018, bonds accounted for only 10.8 per cent of the funds raised, while bank loans constituted 50.1 per cent, and equity financing was at 25.9 per cent (ESCAP, 2019a).

In Indonesia, although subnational governments have been legally permitted to issue project-linked bonds since 2014, no such bonds were issued until 2017, as reported by ADB in 2020. Similarly, in India, only a few large cities, such as Bengaluru, Ahmedabad, Pune and Hyderabad, have issued bonds since 1997. According to Moneycontrol, municipal bonds in India have raised approximately $500 million between 2017 and 2022 (Moneycontrol, 2023). However, this amount represents a small fraction of the overall revenue.

There is a growing focus on climate finance and carbon credits aimed at addressing urban infrastructure, such as water and transport. Green bonds also play an important role, especially in the Asia-Pacific region (Tolliver and others, 2021). This emphasis may bring about changes in the future, potentially opening up avenues for local governments to tap into capital markets.

In addition, foreign funding can be raised from multilateral banks by national governments and then lent to local governments. Apart from traditional lending, multilateral banks also serve as coordinators of finance from multiple sources and increasingly for green finance. An example of this is the ASEAN Catalytic Green Finance Facility, which provides support to "prepare and finance infrastructure projects that promote environmental sustainability and contribute to climate change goals" (ADB, 2023). This coordination role has led to harmonized principles, such as the Joint Methodology for Tracking Adaptation Finance and the Common Principles for Climate Change Adaptation Finance Tracking.

Private capital can play a role in financing urban infrastructure. The public sector accounts for 90 per cent of infrastructure investment in the region (ESCAP, 2018).

There is nascent growth of private finance, which involves the capitalization of the same revenue streams,[12] especially user fees (Hahm, 2019). However, it may be possible to raise more finance if private investment led to improved revenue collection or operational efficiency. For example, if collection of water bills improved or if non-revenue water were reduced, lenders would be willing to extend larger loans, given the greater cash flows. This could free up public finance resources to invest in non-revenue generating activities, for example, protection against flooding risk or sea-level rise.[13]

[12] Out of 1,072 privately financed water and sanitation projects (partly or wholly) undertaken between 1993 and 2017 globally, 654 projects were in the Asia-Pacific region, of which 499 were in China.
[13] The electricity distribution companies in Mumbai and Delhi are privately owned, as is water supply in Manila; many utilities are corporatized, as in Phnom Penh. Smaller infrastructure, such as multilevel parking, can also be concessioned, and some cities can use it as a revenue source.

Box 4.2. From savings to skylines: how domestic pension funds can drive urban infrastructure

Domestic pension funds play a crucial role in financing urban infrastructure projects. These funds, which manage retirement savings of individuals and institutional investors within a country, possess substantial financial resources that can be channeled towards long-term infrastructure investments. The stable and predictable nature of pension fund contributions aligns well with the long-term financing needs of urban infrastructure projects, which often have extended life cycles.

In the Asia-Pacific region, the National Pension and Provident Fund of Bhutan has invested in the 126 MW Dagachhu Hydroelectric Project, taking a 15 per cent equity stake, Druk Green (the national operator of hydropower stations in Bhutan), taking a 59 per cent stake, and Tata Power Company of India (the power purchaser), taking a 26 per cent stake (ESCAP, 2019). To increase the supply of funds for municipal bonds, some countries are mandating investments by domestic pension funds. Pension funds in Poland are obligated to invest a part of their corpus in municipal bonds (OECD, 2002). India, for example, is contemplating making it incumbent for the Life Corporation of India and the Employees' Provident Fund Organisation, which have combined assets of $604.87 billion, to invest 1 per cent of their pension fund in bonds issued by State-run power lending firms to finance green projects (Reuters, 2023).

By investing in urban infrastructure, pension funds can generate steady returns and diversify their portfolios, enhancing their ability to meet future pension obligations. Additionally, these investments contribute to the development and modernization of urban areas, improving the quality of life for residents and fostering economic growth. The participation of domestic pension funds in financing urban infrastructure can mobilize domestic savings and reduce reliance on external sources, thereby enhancing a country's financial stability and making them self-sufficient. Collaboration involving pension funds, governments and other stakeholders is essential to create an enabling environment that facilitates investments and maximizes the positive impact of domestic pension funds in funding urban infrastructure.

Reimagining municipal finance for a sustainable future

Because of the COVID-19 pandemic, governments had to reallocate funds to address the immediate needs of public health, resulting in budget deficits and limited resources for ongoing projects and services. Many municipalities were forced to cut spending, delay or cancel infrastructure projects and implement austerity measures to manage their finances. The pandemic highlighted the vulnerability of municipal finance systems and the need for increased financial resilience and support mechanisms to mitigate the impact of future crises.

Grants and intergovernmental transfers

The COVID-19 pandemic led to a reduction in intergovernmental grants and transfers for urban development. In some cases, governments at various levels had to divert resources and funds towards immediate public health measures and emergency response, reducing the allocation of grants and transfers for urban development. In Japan, prefectural spending to contain the novel coronavirus, amounting to $9.5 billion in July 2020, drained the reserve funds of most of the prefectural governments by more than half. According to one survey, all 47 regions had already used 58 per cent of their reserves at that time (Shimbun, 2020). Consequently, many urban areas have experienced delays or cancellations of crucial development projects, hindering progress in addressing infrastructure needs and improving the quality of life in cities (OECD, 2020b).

To resource a post COVID-19 recovery, federal finance is a key part of the picture whenever the revenue-raising powers are concentrated, but expenditure responsibilities are more dispersed. In India, the disbursement of funds from the federal government's divisible pool, including a share in taxes and grants, takes place through systemic and programmatic transfers to lower tiers of governments and specialized parastatal bodies, which implement large urban infrastructure projects, such as water and power utilities. To make intergovernmental fiscal transfers effective, a transparent framework to ensure that these are adequate, just and free of political biases is fundamental. For example, the National Finance Commission in India allocates revenues to states every five years and respective state finance commissions are supposed to similarly allocate revenue to local governments in rural and urban areas. These transfers can be untied or earmarked. For example, the most recent (15th) federal Finance Commission earmarked transfers to local bodies, conditional on certain environmental criteria on ambient air quality, which is an interesting example of domestic green finance (India, Ministry of Finance, 2021). Intergovernmental transfers in China, while much more extensive, with a much higher share going to the subnational governments, are not mediated through such an institutional process (Wingender, 2018).

Box 4.3. The funding and provision of education and an equitable urban future

Who should be responsible for the funding of the provision of education? Currently, countries vary in their allocation of responsibilities and funding. In the United States, local property taxes fund the neighbourhood public schools, with a wide variation in the spending per student (affluent areas spending more, thus exacerbating the inequality in quality of education).[14] In China, there are large differences in school quality across rural and urban areas (Yang, Huang and Liu, 2014). In India, the poor quality of public education has led to the growth of private schools across the fee spectrum (for example, there are offerings at each price-quality combination). Separately, there is household investment in after-school tutoring and support, common to both India and China. How should education be funded – with what mix of local, national and provincial funds – and who should provide it? There is little consensus on this yet, but it may be the most critical determinant of equity in the urban future.

[14] The United States provides equalizing funding across school districts. Limited federal funding (Title I) is also provided for low-income students. More information is available at https://www.edworkingpapers.com/ai21-443.

Own-source revenue

Own-source revenue had declined due to the economic disruptions caused by the pandemic and constrained the ability of local governments to fund urban development projects and provide essential services.

Own source revenues had declined due to the economic disruptions caused by the pandemic and constrained the ability of local governments to fund urban development projects and provide essential services. Business closures, reduced consumer spending and widespread job losses resulted in lower tax revenues, particularly from sectors, such as hospitality, tourism and retail. Property tax collections were also affected, as some individuals faced difficulties in paying their taxes or sought relief measures. Furthermore, fees and charges associated with services, such as parking, permits and licenses, were negatively affected, as economic activity slowed. This has highlighted the need for cities to diversify their revenue sources, enhance financial resilience and seek additional support from higher levels of government and international institutions to sustain urban development initiatives in the face of future crises.

Local governments use a range of instruments to raise own-source revenue, including taxes, fees, user charges, penalties, planning and building-related charges, and land-use conversion charges. Property tax is traditionally seen as an appropriate tax base to fund actions with local benefits and is the most buoyant of the instruments that could help local governments generate a substantial share of local tax revenue. However, not all countries use it extensively. For example, Thailand does not have generalized property tax for own-use, while some local governments in Japan and the Republic of Korea also have income tax schemes.

© mariusltu - Aerial. Colombo - commercial capital and largest city of Sri Lanka

Figures 4.1a and 4.1b show the share of local government revenue in general government revenue and the share of property taxes in local government revenue for select countries in the Asia-Pacific region. If local government units can levy other taxes, property tax constitutes a lower share of local revenue. In some countries, the introduction of a goods and services tax (GST) has subsumed local taxes and municipal revenues have declined in cities. For instance, in 37 municipal corporations of India, municipal revenue has declined from 0.49 per cent of GDP in 2012-13 to 0.45 per cent in 2017-18 and own-source revenue has dropped from 0.33 per cent of GDP in 2012-13 to 0.23 per cent in 2017-18 (Ahluwalia and others, 2019). This needs to be taken into consideration in intergovernmental transfer as well as reassignment of new taxes to the local level. In addition, in 2018, the share of property tax in GDP was much lower for countries in the Asia-Pacific region compared to other regions, implying there is significant potential to enhance the collection of property tax in the Asia-Pacific countries.

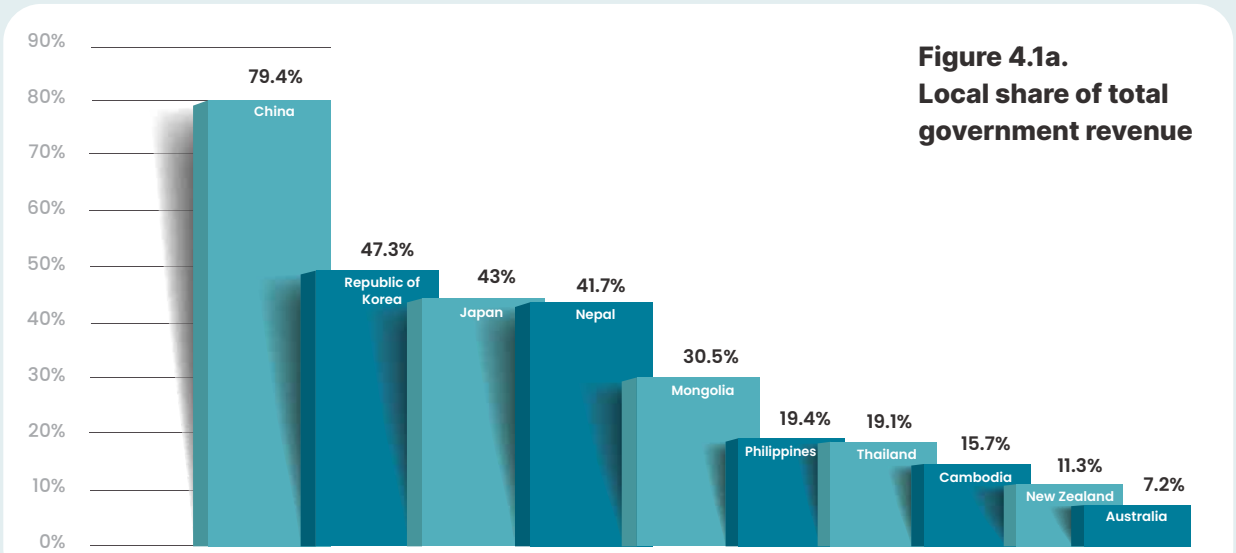


Figure 4.1a. Local share of total government revenue

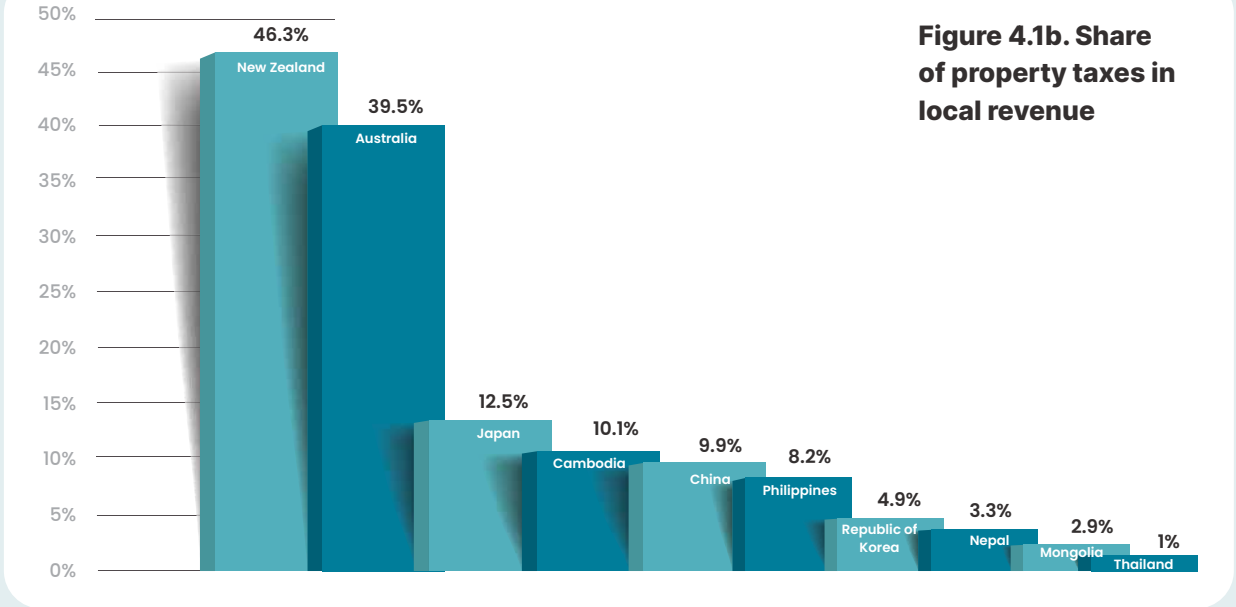


Figure 4.1b. Share of property taxes in local revenue

Source: OECD-UCLG World Observatory on Subnational Government Finance and Investment. Available at https://stats.oecd.org/viewhtml.aspx?datasetcode=SNGF_WO&vh=0000&vf=00&l&il=blank&lang=en&vcq=1111#.

Note: Financial revenue data are for 2019–2020 for most countries. Other sources are OECD (2020) Subnational governments in OECD countries (2020) and IMF Government Finance Statistics (n.d.).

Table 4.1. Property taxes as a percentage of gross domestic product in different regions

Sources: Organisation for Economic Co-operation and Development Global Revenue Statistics Database, 2021 (accessed 27 October 2021) quoted in McCluskey, Bahl and Franzsen (2022).

	2014	2015	2016	2017	2018
European Union (27)	2.2	2.3	2.3	2.3	2.4
OECD countries (37)	1.9	1.9	2.3	1.9	1.9
Africa (30)	0.4	0.4	0.4	0.3	0.3
Asia and the Pacific (24)	0.7	0.7	0.7	0.7	0.7
Latin America (26)	0.9	0.9	0.8	0.9	0.8

Digitalization and tax revenue

The pandemic accelerated the adoption of digital platforms for delivering services, facilitating payments and tracking digital transactions. With lockdowns and social distancing measures in place, local governments had to quickly adapt to digital platforms and technologies to continue delivering services and maintaining operations. This accelerated the adoption of digital tools for remote work, online communication, e-governance and virtual service delivery, transforming traditional urban development practices. The shift to e-commerce and online transactions during the pandemic also generated new revenue streams for governments. As more economic activities moved online, governments had to adapt tax policies and regulations to capture digital transactions and ensure fair taxation.

The building up of a property tax base in particular, requires investment in land and property cadastres, which is even more critical when the development of cities has largely been informal (in this respect, Central Asian countries with more formal State-led development have better cadastres). However, new technologies are facilitating this process considerably. Quezon City was the first local government in the Philippines to computerize property and business tax assessment and collection.

When Fernando Feliciano Racimo Belmonte Jr. took office as the ninth mayor of Quezon City in 2001, the city faced financial distress, with a budget deficit, 1.4 billion Philippines Peso (Pt) ($25.2 million) in statutory claims and a similar amount in loans (Gonzales and Calugay, 2018). However, by 2006, total own-source taxes had more than doubled, from Pt 2.7 billion to Pt 5.7 billion and property taxes had risen by 75.1 per cent (Gonzales and Calugay, 2018). Digitization played a key role.[15] It helped improve service quality, reduced individual discretion and enabled revenue collection to be monitored in real time. Using this computerized information, the city cross-checked property transfer tax payments with the Land Registration Authority.[16] A GIS-based inventory of taxable properties was prepared, and coordination of land and building information across departments was improved. Similar stories occurred in Punjab province in Pakistan and the city of Surat in India, where using GIS maps were used to improve the collection of property taxes, indicating that this method can be adopted in multiple contexts.

In 2019, (when Fernando Belmonte's daughter, Joy, took office as mayor), Quezon City collected Pt 7.4 billion in local tax revenue, which included Pt 3.8 billion from property taxes and Pt 12.7 billion from business taxes (Gonzales and Calugay, 2018), which were also reformed in a similar manner (the share of property tax in local revenue actually declined over the period 2001–2019, from 52 to 22 per cent). The city also significantly improved waste management and initiated a microenterprise lending programme, which, by 2010, had extended loans worth Pt 2.47 billion to 179,743 clients, testifying how improved efforts to attain revenue can help to build a more inclusive city (Gonzales and Calugay, 2018).

[15] Other actions included discounts for early payment, making it more convenient to make a payment (starting in 2013, taxes can be paid with mobile money) and stronger enforcement, with auctions of delinquent properties.
[16] One study found that 58 per cent of the official receipts recorded at the Land Registration Authority were counterfeit and that only 42 per cent of the transfer tax payments were accurate. See Amatong (2005).

User fees and charges

Lockdown measures and reduced economic activity led to a decrease in demand for services, such as public transportation, parking, recreational facilities and other amenities, resulting in a drop in corresponding user fee collections.

Lockdown measures and reduced economic activity led to a decrease in demand for services, such as public transportation, parking, recreational facilities and other amenities, resulting in a drop in corresponding user fee collections. Moreover, businesses and individuals facing financial hardships had less financial flexibility to afford or access certain services, further affecting user fee revenue. Local governments had to grapple with the challenge of balancing the need to continue to provide essential services amid a reduction in revenue from user fees and charges. This situation highlighted the importance of diversifying revenue streams, developing innovative financing mechanisms and ensuring financial sustainability in urban development planning to mitigate the vulnerability of cities during times of crisis.

User fees are also a tool to support households in addressing the cost-of-living crisis and to incentivize climate-resilient behaviour. Many countries apply differential pricing structures for water. For example, a block of 10,000 to 20,000 litres is often free or priced at a much lower rate to enable low-income families to get access to this essential service. In Delhi, 20,000 litres of water is supplied free of charge for residential use. In Dhaka, low-income families pay 12.50 Bangladeshi taka (TK) ($0.11) per 1,000 litres, while the high-income families pay Tk 37.50 (New Age: Bangladesh, 2022). In Kuala Lumpur and Putra Jaya, the first 20 cubic metres (1,000 litres) are 0.57 Malaysian ringgit (RM) ($0.12) per cubic metre, the next 15 are RM 1.03 per cubic metre, and after that, the price rises to RM 2 ($0.43) per cubic metre (RinggitPlus, 2019). In Hanoi, domestic users pay 5,973 Vietnamese dong (₫) ($0.25) per cubic meter for the first 10 cubic meters per month, and 15,929 ₫ for each unit in excess of 30 cubic metres (Hai, 2023). However, some of the urban poor are not able to access the public provision of water even with differential pricing. They rely on an informal market-based source of water supply, often at a higher price. For Instance, in Kathmandu, many slum households buy 20-litre plastic water jars that cost $0.35 each (Priyam, Sherpa and Das, 2022).

Kuala Lumpur is also using user fees to increase the use of public transport. Its My50 travel pass, which offers 30 days unlimited rides on Rapid KL LRT, MRT, Monorail, BRT, Rapid KL bus and MRT feeder bus services in Klang Valley, is very popular (Bernama, 2023). In Delhi, from 2019, a pink ticket allows women to ride for free on buses. Since the inception of the scheme, more than one billion trips have been made using this ticket. Arguably, it has helped to make the city and its labour market more accessible to women. In both cases, user fees were used to make the city more climate resilient, by disincentivizing water consumption and by incentivizing the use of public transit.

Land-based financing

Municipal lands can be a major source of local government income, either through leasing, outright sale or other various means of land value capture, such as betterment levies and tax increment financing. As the pandemic disrupted economic activities and led to market uncertainties, land transactions and sales have slowed.

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Investors and developers became cautious about making long-term investments, including land acquisitions, due to the uncertain economic climate and potential risks associated with urban development projects. Reduced demand for commercial real estate, such as retail and office spaces, also affected land sales and value capture. Additionally, the pandemic has brought attention to the need for equitable and sustainable urban development, with a greater focus on affordable housing, public spaces and resilient infrastructure. As a result, there may be shifts in land value capture mechanisms to prioritize social and environmental considerations, such as community benefits agreements and the incorporation of green and sustainable infrastructure in development projects. The long-term effects of the pandemic on land asset sales and land value capture are still unfolding, and it is likely to reshape urban development strategies and practices in the post-pandemic era.

Assets can also be created through regulatory action, such as the additional floor area ratio, which acquires value because space is scarce in specific locations. Land sales had been a major source of urban finance in China, with a multi-trillion debt raised by local governments, secured with land, using local government financing vehicles, which are special purpose entities that allowed them to monetize land value to invest in infrastructure (Shepherd, 2023). But, as growth slowed and the property sector was hit by defaults, this strategy seems to have reached its financial limits, as weak local government financing vehicles face refinancing risk (Li, 2023). Another risk is that this strategy can also lead to urban sprawl, unless care is taken to ensure that the planned urban expansion is compact. For example, in the Republic of Korea, land value capture was used to finance more than 20 per cent of the costs involved in building five new towns as compact mixed developments around Seoul (Lee and Ahn, 2005).

Box 4.4. Land value capture finances the Mass Transit Railway (MTR) of Hong Kong, China

Land can generate adequate resources to fund investment-intensive infrastructure, such as the unique case of the Mass Transit System in Hong Kong, China developed by the Mass Transit Railway Corporation. Hong Kong, China, with a population of about 7 million, and 11 million daily passenger journeys by railways, trams, buses, minibuses, taxis and ferries, needed to invest in expanding and sustaining the public transport system. The Mass Transit Railway Corporation, established in 1975 to provide metro services, stretches 218.2 km and has 84 stations and 68 light rail stops.

Between 1998 and 2013, property-related operations have generated more than 88 billion Hong Kong dollars (HK$), or approximately US$11 billion, contributing substantially to the capital and operating expenses. Revenues are derived from real estate sales and from renting Mass Transit Railway Corporation-owned properties, especially commercial and office spaces. The strategy of the Mass Transit Railway Corporation is to allocate property development rights to private developers who pay all development costs, including the land premium, for acquiring exclusive development rights from the Mass Transit Railway Corporation. Private developers also bear the construction and commercialization risks and costs related to the residential and commercial development.

Source: Wing-tat Hung (2014).

Other strategies used by cities in some countries are to charge a levy of higher taxes on properties in areas near transit corridors (betterment charges) or permitting a higher than normal floor space per unit area (floor area ratio) for specific projects, such as informal settlement rehabilitation, with the provision that it can be used at other sites (transferable development rights) (Grover and others, n.d.). However, these strategies make it more expensive to live near transit points, when the efforts should be to densify transit corridors for climate resilience. A better strategy would be to increase the far area ratio in these corridors, as done in the cities of Ahmedabad and Pimpri-Chinchwad in India, where it has been increased by 80 per cent. As for transferable development rights, if they are offered in areas that do not have adequate infrastructure, it can lead to traffic congestion or water scarcity.

It is necessary that revenue generation from such assets as additional floor area ratio (created via regulation) be integrated into the planning process to ensure that the city remains sustainable. The pricing of the assets is also an issue. The Republic of Korea enacted a law in 1997 that stipulated that appropriate land values must be captured from new developments for transport infrastructure. From 2001 to 2008, a total of 38 projects in Gyeonggi had significant land capture finance. The average land value captured per project was approximately $559 million, 21.5 per cent of the average $2.6 billion project cost (Lee and Ahn, 2005).

Land and various incentives can be used to attract investors to build new cities. This is being attempted for the new capital of Indonesia, Nusantara (Medina, 2023), described in box 1.3. The capital is being moved as a consequence of the climate crisis, with the current capital, Jakarta, sinking at the rate of 25 cm per year (Southeast Asia Development Solution, 2022). The Government of Indonesia will invest 20 per cent of the project cost and the rest is expected to come from foreign investors, who are being offered 95-year land-use permits, corporate income tax exemptions, tax holidays and personal income tax exemptions for investments in priority projects (Xinhua, 2023).


© Hanoi Photography - Aerial view of Hanoi skyline cityscape at Le Van Luong street, Thanh Xuan district

Private participation

The economic disruptions and uncertainties caused by the pandemic crisis led to a decline in private sector investments in urban development projects.

The economic disruptions and uncertainties caused by the pandemic crisis led to a decline in private sector investments in urban development projects. Investors had become more risk-averse and cautious, diverting their funds towards safer assets or holding back investments altogether. The pandemic-induced lockdown measures, supply chain disruptions and reduced consumer spending further hampered private sector activity, affecting industries that contribute to urban development, such as construction, real estate and hospitality. Moreover, financial institutions tightened their lending criteria, making it more challenging for developers and businesses to access financing for urban development projects. The decline in private sector financing for urban development projects had repercussions on employment, economic growth and the overall pace of urban transformation.

Access to private finance and the market for borrowing is even more constrained in non-metropolitan and secondary cities, although the transport sector is a noteworthy exception. In the transport sector, momentum has been gained in implementing ambitious infrastructure projects, such as in Khon Kaen, Thailand. New Delhi has used public-private partnerships to improve its bus systems by increasing efficiency. In 2007, the city initiated a bus system that was privately owned and operated under a gross cost contract that paid bus operators for adhering to a pre-set schedule, with ticket revenue and usage risk remaining with the government (Sahai, 2009).

The 457 bus routes of New Delhi were grouped into 17 distinct clusters and each cluster was awarded to a concessionaire. The public operator, DTC, also operates on these routes. Currently, there are about 3,300 cluster buses and 4,000 DTC buses (ET Auto, 2023). It is estimated that the cluster bus scheme saves the New Delhi government more than $100 million annually. This gross cost model has been used by the federal Government to award contracts under the National Electric Bus Programme, which has a target of 50,000 buses. The first procurement of more than 5,000 buses under the FAME-2 scheme, resulted in prices (before subsidy) of less than $70 cents per km, including capital and operating costs, already less than the current cost of diesel/CNG buses (India, Ministry of Power, 2022). The scheme is being expanded.

Box 4.5. Entrepreneurial urbanism: a new private urban rail network in Thailand

Khon Kaen is a secondary city located in the Isan region in north-eastern Thailand. Its population is 120,857 (all-populations.com, 2023). In 2015, twenty of the city's major business leaders came forward and set up the Khon Kaen Think Tank, a non-profit organization, to address multiple development challenges faced by the city, particularly economic stagnation, inadequate infrastructure and climate change. In 2018, the Khon Kaen Transit System Company Ltd. was established, as a multi-stakeholder partnership, with seed money from the Khon Kaen Think Tank. The company has formulated an ambitious plan to develop a light rail transit system that will link five municipalities in the Khon Kaen province with approximately 18 stations and land development around these nodes to give a boost to the future growth of the region. This 26 km, 21 billion Thai baht (B) ($600 million) private sector initiative is scheduled to begin construction in 2024, as the first urban rail network in Thailand outside Bangkok (The Straits Times, 2023). If successful, it will be an innovative model in which public infrastructure is solely funded by the private sector. It will also be an example of local self-determination and entrepreneurial urbanism, which can be followed by other cities that have similar infrastructure crises (ASEAN, 2021; Way Magazine, 2021).

Improving urban finance

Increasing the sources of urban finance, especially in the developing countries of the Asia-Pacific region, is required as part of sustainable long-term recovery from multiple crises. As such, key recommendations are as follows.

Expand, diversify and increase municipal revenue collection to stimulate a local economic recovery

To operate in a post-recovery context, expanding, diversifying and increasing municipal revenue collection is a critical requirement for all countries across the region. The use of digital tools makes it much more feasible to collect property-based taxes and tailor them appropriately so that vulnerable groups are protected. However, many secondary cities lack the capacity to implement this effort.

By diversifying and expanding revenue sources, municipalities can generate additional funds to invest in critical areas, such as housing, health care, infrastructure, education and social services. This, in turn, stimulates economic activity, creates jobs and improves the overall quality of life for residents.

Municipalities can explore various strategies, including, among others, optimizing property tax collection, implementing fair and efficient local tax systems, promoting local economic development to attract businesses and increase tax revenue, and exploring innovative financing mechanisms, such as public-private partnerships. Cities must also be able to borrow, though caution is necessary to prevent irresponsible borrowing practices. This needs more transparent and accountable municipal accounting practices. Strengthening revenue collection not only helps address immediate recovery needs, but it also enhances the long-term financial sustainability of cities, ensuring their resilience in the face of future crises.

Establish a transparent framework for intergovernmental transfers for greater economic resilience against future shocks

Bolstering economic resilience against future shocks requires a transparent framework for intergovernmental transfers. The limitations of conventional instruments of municipal finance will impede cities from taking on emerging responsibilities, such as local level climate action, and respond to disasters, such as floods, earthquakes and pandemics.

The COVID-19 crisis has underscored the importance of efficient and equitable resource allocation to address the urgent needs of urban areas. A transparent framework ensures that intergovernmental transfers are based on a clear criterion, such as population size, revenue capacity and service demands. By having a transparent allocation process, accountability is enhanced and the risk of favoritism or political biases is reduced. This transparency promotes trust and confidence among all levels of government, fostering collaboration and effective coordination in addressing post-pandemic challenges.

Furthermore, a transparent framework allows cities to better plan and allocate resources, enabling them to prioritize critical sectors, such as housing, health care, infrastructure and social services. It helps ensure that resources reach cities in a timely manner, enabling them to recover, rebuild and stimulate economic growth. Overall, empowering cities with financial resources is needed to facilitate a robust and inclusive recovery from the impacts of the pandemic.

Ensure that land-based financing instruments are aligned with the development of compact polycentric urban areas

Polycentric urban areas refer to urban regions that have multiple centres or nodes of development and activity, rather than being dominated by a single primary city centre. In polycentric urban areas, several urban cores or subcentres emerge, each with its own economic, social and cultural significance. To develop compact polycentric urban areas that play a pivotal role in supporting a post-pandemic recovery in cities requires innovative land-based financing instruments. These financing mechanisms are centred around capturing the value created by urban development and using it to fund infrastructure, services and public amenities. By promoting compact and polycentric metropolises, cities can optimize land use, reduce sprawl and enhance efficiency in transportation and infrastructure systems. This approach can attract investments and create vibrant, livable urban spaces. Land-based financing instruments, such as value capture mechanisms, land value taxes and development impact fees, can generate additional revenue streams for municipalities, enabling them to fund critical projects and services.

Furthermore, these instruments can incentivize sustainable and inclusive urban development and foster economic growth, job creation and social well-being. Such planning also needs to take into consideration the limits imposed by climate change, such as balancing the high value real estate development along the coast with the increased risk of flooding. Simultaneously, creating and conserving urban forests and public spaces not only helps mitigation, but it also supports adaptation by reducing heat island effects and increasing water absorption. By leveraging land value and adopting a compact polycentric approach, cities can emerge from the pandemic with a stronger financial foundation and a more resilient urban environment.

Create more stable and predictable policy, regulatory and incentive frameworks to enhance private sector investment for an urban economic recovery

To create more robust policy, regulatory and incentive frameworks that enhance private sector investment in cities and support a post-pandemic recovery, several measures can be considered. First, governments should prioritize stability and predictability by providing clear and consistent policy frameworks that foster investor confidence. This involves transparent regulations, streamlined approval processes and a reliable legal system. Additionally, governments can introduce targeted incentives, such as tax breaks, grants or subsidies, to encourage private sector investments in critical sectors, such as health care, digital infrastructure, renewable energy and sustainable urban development. Collaboration between public and private sectors is crucial, and governments can facilitate public-private partnerships to leverage private sector expertise, resources and innovative solutions for urban development projects. Improving access to financing and reducing investment risks can be achieved through the establishment of dedicated investment funds, credit guarantee mechanisms or risk-sharing arrangements.

Moreover, governments should actively engage with investors and industry stakeholders to understand their needs, identify barriers and adapt policies accordingly. By fostering a conducive environment for private sector investment, cities can attract capital, drive economic growth, create job opportunities and ensure a resilient and sustainable post-pandemic recovery.

Promote enabling environments to facilitate climate-responsive urban finance and municipal finance instruments in support of local climate action

Making urban finance more climate-responsive is vital to support the post-pandemic recovery in cities. As cities rebuild and revive their economies, integrating climate resilience into financial strategies can help foster sustainable and inclusive development. By directing financial resources towards climate-friendly projects and initiatives, cities can simultaneously address climate change and stimulate economic growth. Investments in renewable energy, energy-efficient infrastructure, green transportation and compact urban planning can create jobs, attract private sector investments and enhance the overall quality of urban environments.

Creating an enabling environment for the flow of climate finance to cities is fundamental to take actions to scale. This can be accomplished through mechanisms for cities to directly access climate finance that are complemented by an accessible climate information architecture for measuring climate impacts and disclosure standards. This needs to be enabled by an appropriate legal, regulatory and policy framework at the national level for strengthening fiscal autonomy, de-risking climate investments, financing just transitions, and facilitating institutional and private investments in climate finance.

Climate-responsive urban finance also ensures that cities are better prepared for future climate-related risks and shocks, reducing vulnerability to extreme weather events and environmental degradation. By adopting innovative financing mechanisms, such as green bonds, climate funds and public-private partnerships, cities can mobilize capital for climate-friendly initiatives and leverage private sector expertise. Moreover, integrating climate considerations into financial planning enables cities to align their investments with long-term sustainability goals, fostering a more resilient and prosperous future for urban communities.

Improving a city's readiness for climate-responsive project design in this process includes strengthening technical assistance facilities to help them design projects and identify climate financing options. This supports comprehensive planning of cities to identify and build a pipeline of projects that can attract climate financing and adopt mechanisms for improving their own revenue streams to attract and scale up inclusive climate investments.

In conclusion, advancing urban finance for a post-pandemic recovery requires the establishment of a solid foundation that prioritizes long-term resilience. A combination of leveraging financial resources, fostering collaboration among stakeholders and implementing sustainable and inclusive financial mechanisms is essential. By adopting these strategies, urban finance can play a pivotal role in driving a prosperous and inclusive post-pandemic recovery for cities and to enhance their resilience to future shocks.

© 昊周 - Ancient buildings by the river in Dangkou Ancient Town, Wuxi, Jiangsu, China

Conclusion

Seizing the urban opportunity

The challenges posed by multiple crises, including the COVID-19 pandemic, the climate emergency, affordable housing shortages and the digital divide, demand a comprehensive and coordinated response from cities in Asia and the Pacific.

In this report, four key themes to move cities to a more resilient and sustainable future have been explored – strengthening urban and territorial planning, advancing multilevel actions for low-carbon and climate-resilient cities, promoting urban digital transformation and enhancing urban finance. To achieve the Sustainable Development Goals across Asia-Pacific cities, recommendations highlight the need for collaborative, innovative solutions that build on regional cooperation and take a people-centred approach.

To achieve the Sustainable Development Goals across Asia-Pacific cities, recommendations highlight the need for collaborative, innovative solutions that build on regional cooperation and take a people-centred approach.

The importance of strengthening urban and territorial planning as the foundation for sustainable development and resilience cannot be overemphasized. To achieve this, an enabling policy environment responsive to multiple crises is crucial. The integration of spatial, environmental, social and economic considerations into national urban policies, coupled with agile subnational planning frameworks, will support cities to align with global commitments and overcome crises. Continuing to support the development of compact low-carbon neighbourhoods and cities through appropriate policy and planning regulations will lay the foundation for improved resilience, sustainability and social cohesion of urban areas. Capacity-building and coordination across all levels of government and stakeholders – and just as importantly, between cities – are essential to ensure effective implementation and inclusive planning processes. Addressing the affordable housing crisis and upgrading informal settlements through integrated housing, urban planning and risk-disaster management policies will enhance living conditions and promote social equity, contributing to the region's overall well-being.

As the world faces record-breaking climatic conditions, advancing multilevel actions for low-carbon and climate-resilient cities is urgent.

As the world faces record-breaking climatic conditions, advancing multilevel actions for low-carbon and climate-resilient cities is urgent. Cities must recognize and act on the intertwined nature of the climate and biodiversity crises. They must incorporate innovative adaptation initiatives that simultaneously address climate risk, air quality, biodiversity and livability into their short- and long-term development strategies, supported by an enabling national environment. To strengthen urban climate action, it is imperative to integrate urban communities as key actors, recognizing the critical role of households and communities in fostering resilience. Enhanced data collection and local evidence should inform platforms for monitoring, reporting, verifying and integrating multilevel climate action, including instruments, such as locally determined contributions and more localized NDCs. Further harnessing the power of public, private and civil society stakeholders to effectively transition cities to low-carbon energy is critical to overcome urban energy and climate crises.

To close the digital divide and tap the full potential of urban digital transformation, the need for comprehensive and people-centred approaches is highlighted in this report. The starting point is for cities to develop comprehensive smart-city policies and strategies that improve access and accelerate innovation. Collaboration and partnerships between diverse stakeholders can enable cities to scale up digital technologies effectively and inclusively. Enhancing government capacities to design and implement inclusive smart-city strategies is instrumental in driving urban transformation. Citizen engagement and multi-stakeholder partnerships can support a digital transformation that aligns with the Sustainable Development Goals and leaves no city behind.

In the post-pandemic context, novel solutions to advance urban finance are needed to enable a long-term recovery. Innovative expansion and thoughtful diversification of municipal revenue collection modalities can support local economic recovery and fund investments in critical services and infrastructure. Transparent intergovernmental transfers will enhance economic resilience and help build trust at all levels of government. Land-based financing instruments aligned with compact polycentric urban areas will optimize land use and foster inclusive development. Creating stable and predictable policy frameworks and incentivizing private sector investment will further drive economic recovery. Climate-proofing urban finance is crucial to supporting the sustainability and resilience of cities.

United urban futures: building sustainable cities together through regional cooperation

To move from recommendations to action, there is ample opportunity to enhance regional cooperation across all four themes. Clearly articulating the problems and proposed solutions creates a common vision for joint action.

To move from recommendations to action, there is ample opportunity to enhance regional cooperation across all four themes. Clearly articulating the problems and proposed solutions creates a common vision for joint action. Networking, regional collaboration and experience-sharing can accelerate knowledge creation, capacity-building and technical expertise across the Asia-Pacific region. These opportunities are particularly salient regarding climate resilience and the urban digital transformation from which there is a need to develop regional and subregional platforms to foster collaboration and learn from best practices related to digital innovation collaboration and climate and adaptation.

In 2023, ESCAP member States adopted an ambitious resolution at its seventy-ninth session of the Commission to advance regional cooperation for sustainable urban development and localization of the Sustainable Development Goals in Asia and the Pacific.

Under the resolution, voluntary local and subnational reviews (VLRs and VSRs), Sustainable Development Goal 11 national road maps, and intermunicipal cooperation to enhance inclusive multilateralism and regional cooperation were promoted to accelerate local action to deliver risk-informed urban futures.

© Veniamin Kraskov - Panoramic view of Almaty city, Kazakhstan

Box 5.1. Shaping the Asia-Pacific urban future: the evolution of voluntary local and subregional reviews

Through the Penang Platform for Sustainable Urbanization, launched at the seventh session of the Asia-Pacific Urban Forum (APUF-7), Asia-Pacific was the first region region in the world to develop regional guidelines on VLRs in line with global guidance. At the time of this report, these guidelines have been applied in more than ten cities and provinces, which have produced VLRs and VSRs since their release in 2020. VLRs and VSRs foster collaboration, knowledge-sharing, and the alignment of strategies among cities and governments across the region, which is essential to address the challenges posed by multiple crises and promote sustainable urban development across all four thematic areas of this report. VLRs and VSRs are powerful tools for cities to assess their progress towards achieving the Sustainable Development Goals and provide a valuable opportunity for accountability, inclusive evidence-based decision-making and improved policy development. By voluntarily sharing their experiences and lessons learned, cities can inspire and learn from one another, creating a virtuous cycle of knowledge exchange and best practices.

In the context of climate resilience and sustainability, VLRs and VSRs can facilitate the identification of urban planning initiatives, climate adaptation and mitigation strategies that have proven to be effective in different contexts. This information-sharing fosters collective learning and enables cities to adopt tailored approaches based on the successes and challenges of others, accelerating progress towards climate-resilient and sustainable urban futures.

VLRs and VSRs also help to bridge the gap that often exists between national level policies and local implementation.

In the future, integrating foresight thinking into VLR and VSR reports and processes can significantly enhance the effectiveness of these reports in guiding sustainable development efforts in cities through these troubled times in which cities need to be agile in their responses and not only rely on reviews that give a picture of the Sustainable Development Goals in one point of time. Foresight involves anticipating and preparing for future challenges and opportunities, and includes risk assessments to identify potential vulnerabilities and hazards that could affect a city's sustainable development journey. Integrating such risk-informed planning can strengthen a city's agility to bounce back from shocks and adapt to changing circumstances. Tools to forecast urbanization can provide a resource for cites to better understand current and future resource demands, and will allow for more effective management of urban growth.

By embedding foresight and urban futures thinking into VLR and VSR reports, which are backed up by long-term human and financial investments in people, cities can proactively plan for the future, anticipate challenges and seize opportunities for sustainable development. These forward-looking approaches will not only enhance the effectiveness of the VLR and VSR process but also contribute to the creation of resilient and future-proofed cities for generations to come.

Sustainable Development Goal 11 specifically focuses on making cities inclusive, safe, resilient and sustainable. Multiple global crises have disrupted the process to realize the Sustainable Development Goals in tandem with the ongoing COVID-19 pandemic. The 2023 Sustainable Development Goal 11 profile for Asia and the Pacific analysed how these shocks and stresses have further destabilized progress in achieving the Goal in Asia and the Pacific. The diversion of local government resources and depletion of municipal income (due to impacts, such as business earnings shortfalls and closures) has also directly affected the ability of cities to invest in meaningful activities that address other Sustainable Development Goal targets, such as urban greenspace and canopy cover (11.7), investment in waste management (11.6), and the conservation and protection of natural heritage (11.4).

Urban and regional policies (11.a) and other planning frameworks in areas, such as disaster management and urban resilience (11.b), also need to be reconsidered due to the deep disruptions to urban systems that have been brought about by these interlinked crises. Even collection of official statistics – critical to the measurement of progress in realizing all of the Goals, as well as urban decision-making and policy development more broadly has been significantly disrupted by the pandemic.

National road maps for Sustainable Development Goal 11 can provide a comprehensive framework for countries to guide urban development and address multiple interlinked crises.

National road maps for Sustainable Development Goal 11 can provide a comprehensive framework for countries to guide urban development and address multiple interlinked crises. As this Sustainable Development Goal 11 is one of the most multi-faceted ones within the 2030 Agenda, the process for developing a national road map that addresses all of its targets effectively is different to the other Goals, which mostly have clearer topical alignment of the targets contained within them. Sustainable Development Goal 11 national road maps may include strategies for engaging with data availability limitations and approaches to identify or develop proxy indicators that maximize global, regional and national comparability, as well as alternative best practice methodologies for sampling urban characteristics in complex country environments. They also highlight processes and guidelines for prioritizing targets and approaches for embedding implementation actions, with the aim to "shift the dial" on progress towards realizing Sustainable Development Goal 11. This includes monitoring and evaluation looking towards and beyond 2030, as well as the need to embed any road map within partnerships at various scales, and consideration of wider linkages across the 2030 Agenda.

Intermunicipal cooperation involves collaboration between cities and local governments within a region to tackle common challenges collectively. Many issues, such as transportation, pollution, climate action and urban development, transcend individual municipal boundaries, requiring that decisions made have a broader perspective to benefit the entire region. Through intermunicipal cooperation, cities can pool resources to invest in regional climate action projects, such as shared renewable energy infrastructure or climate adaptation measures. Cooperation also facilitates joint planning and coordination, ensuring that regional development aligns with sustainability goals and avoids duplicative efforts. The region facilitates several intermunicipal cooperation forums sponsored by transnational local government associations, such as UCLG ASPAC, ICLEI, CityNet, C40, the ASEAN Smart Cities Network and the Global Covenant of Mayors. ESCAP supports intermunicipal cooperation through strategic initiatives, such as the Smart Cities Innovation Lab (SCIL), under which cities are working together to design and implement smart-city solutions to address their urban priorities and challenges in collaboration with development partners, the private sector, academia and civil society. The joint United Nations project, which involves both intermunicipal and interregional cooperation, aimed to build the capacities of local governments in 16 cities globally to design, implement and monitor sustainable, resilient and inclusive COVID-19 economic and financial responses, recovery and rebuilding plans.

Technical capacity-building, tools and exchanges supporting city climate action, such as those provided by the multipartner Urban-Act project across five countries in Asia, as well as the use of specific climate-reporting instruments, such as RLDCs and localization of NDCs, support multi-level effective governance. The Asia Pacific Mayors Academy was launched in 2019 by ESCAP, UN-Habitat and United Cities and Local Governments Asia-Pacific, in cooperation with the United Nations University, the Institute for the Advanced Study of Sustainability, the Association of Pacific Rim Universities, and the Institute for Global Environmental Strategies. The Academy trains newly elected or appointed mayors to implement sustainable urban policies and solutions as an example of successful regional capacity-building. By organizing workshops, conferences and training sessions, cities can learn about the latest climate-resilient technologies, urban planning strategies and sustainable development practices. These initiatives empower cities with the skills and expertise needed to implement climate-resilient solutions effectively in partnership with national governments and regional organizations. Moreover, regional platforms enable cities to share research, data and case studies, creating a repository of valuable information that cities can access to inform their local climate action plans.

Regional cooperation platforms, such as the Asia-Pacific Forum on Sustainable Development, the Asia-Pacific Urban Forum, the Pacific Urban Forum and the ASEAN Mayors Forum, provide a unified space for cities to advocate their shared interests, such as access to funding, policy support and international cooperation. Joint representation allows cities to amplify their voices on climate-related issues and influence regional and global agendas. By uniting their efforts, cities can build stronger alliances with national governments, international organizations and climate finance institutions, increasing their access to resources and support for climate-resilient and sustainable projects.

Cities are where the complex and interconnected nature of the Sustainable Development Goals and the current global context converge.

Cities are where the complex and interconnected nature of the Sustainable Development Goals and the current global context converge. As host of the eighth session of the Asia-Pacific Urban Forum (APUF-8), Suwon City is showing that through comprehensive localized policies, inclusive governance and innovative approaches, cities can be a powerful vehicle for change and support efforts to realize the Sustainable Development Goals.

Box 5.2. Suwon City empowers a sustainable urban future

The Suwon SDGs Action Report has adopted 10 priorities through localizing the 17 Sustainable Development Goals by taking into considerations the local context of the city's economic, social and environmental conditions. The 10 priority goals, are based on "participatory governance", led by the Suwon Council for Sustainable Development. It includes indicators to measure progress in achieving each priority (Sumon Council for Sustainable Development, 2011).

Key elements across the report are:

I. Unleashing urban opportunities through participatory planning

In line with Sustainable Development Goal 16 on peace, justice and strong institutions, Suwon encourages citizens to participate in the city's urban and budget planning. Over a decade ago, Suwon City established a plan for citizen-led urban planning and began to review measures to implement it in 2011. As such, the Citizens' Group for Urban Policy Planning collects citizens' opinions and holds forums to discuss pending urban planning issues. The results of discussions are documented to set the directions for the basic plans of Suwon City, such as for the 2030 Basic Plans of Suwon.

II. Promoting inclusive urban growth through finance

To encourage citizens to participate in the submission of projects and allocation of funds, Suwon City enacted the Ordinance on the Operation of the Residents' Participation Budget System in 2009. Participatory budgeting promotes transparency and fairness of the local government's fiscal management by engaging citizens in the budgeting process. The city formed the Committee on Citizen Participatory Budget System and the Regional Conference in 2011. As of 2021, a budget of 4.9 billion Republic of Korean won (₩) was provided for 67 projects.

Suwon City aims to guarantee a steady increase in employment through the promotion of quality jobs and industrial innovation. It supports industries through policy, system and financing, focusing on urban infrastructure, science research and industrial innovation. The city has committed to financially support businesses, especially small and medium enterprises (SMEs). In Suwon City, SMEs account for a greater share of job creation than larger companies. The city prioritizes financial support to SMEs given their relatively lower access to capital and financial services compared to larger companies. It enhanced financial support for the technological development of SMEs, such as through the launch of the Business Support Center for SMEs. The funds available have increased significantly, reaching ₩1.17 billion in 2019.

III. Revolutionizing city climate action

Suwon City puts a premium on combating climate change. It is the only local government to manage greenhouse gas inventory in the Republic of Korea. The city sets annual reduction targets to cut total energy consumption and per capita carbon emissions. Under the city's first priority, Responding to Climate Change with Good Energy for All, Suwon City is implementing projects, such as the Shared Sunlight Power Plant construction project, the solar energy housing project, the green building construction project, the old housing energy-efficient renovation project and the green curtains project. In addition, it is actively pursuing various projects to foster a carbon-neutral green city in which citizens participate voluntarily, and the public sector takes the lead. These efforts include citizen education programmes, discussions and carbon-neutral green city projects.

Suwon City is building a green transportation system. It has been mapping urban heat islands and managing the heat-prone areas for climate change adaptation. All of the city's climate policies are based on civic participation and public-private governance. The city has been working with civil society organizations for tree planting programmes and created palm gardens to expand green spaces and reduce traffic volumes.

IV. Creating a smarter city where innovation thrives

Suwon City subsidizes smarter urban design and energy efficiency projects, which increase the number of energy-efficient buildings and encourages citizens to get involved in energy-efficient and eco-friendly practices. Furthermore, Suwon City also aims to reduce areas with impervious surfaces to improve the water circulation system. Its Smart Rain City Suwon project won the silver prize at the Green World Awards in category "Local Authorities",[a] organized by the Green Organization in 2019, and the internationally acclaimed and renowned environmental prize, the 2018 Energy Globe Award, given by the Energy Globe Foundation.[b] The city also won a prize at the national Clean Water City Awards in 2020.

Across all themes of this report, the Suwon City experience shows success in making progress towards achieving the Sustainable Development Goals. It demonstrates that sustainable development in cities is effective when based on respect for diversity and local specificities.

[a] Green World Awards, Green World Awards Winners 2019. Available at https://greenworldawards.com/green-world-award-winners-2019/.
[b] The list of winners of the 2018 Energy Globe Award are available at http://www.ideassonline.org/public/pdf/EnergyGlobeAwardWinners2018-ENG.pdf.

This report has highlighted the need for collective yet localized efforts to achieve crisis-resilient urban futures for Asia and the Pacific. Its ambition is to support the dialogue, collaboration and cooperation needed across government, stakeholders and the region to address the complex challenges cities face. By implementing the recommendations from each chapter, cities in the Asia-Pacific region can forge post-pandemic pathways towards sustainable development, ensuring a brighter and more resilient future where no city is left behind. ESCAP and UN-Habitat alongside urban development partners located across Asia and the Pacific are ready to assist in the implementation of these recommendations and help build a more sustainable and prosperous future for cities in Asia and the Pacific.

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2023

The Future of Asian & Pacific Cities

The Future of Asian & Pacific Cities Report 2023 entitled, Crisis Resilient Urban Futures, is a comprehensive analysis and assessment of sustainable urban development in the Asia and Pacific region at a time of great disruption and uncertainty resulting from multiple interlinked global crises in a post-pandemic era. This report aims to provide valuable insights into the spatial, economic, social, environmental and governance aspects of cities, offering holistic policy recommendations towards a sustainable urban recovery from these crises.

Understanding the dynamics and characteristics of the region's cities is crucial for national and local governments, businesses, local communities, researchers and urban planners. With this report, ESCAP and UN-Habitat continue their collaboration to provide an updated, reliable resource for decision-makers seeking to gain a deeper understanding of the trends, challenges and future opportunities within the Asia-Pacific cities landscape.

The report builds on three previous editions in this series, each of which explored the key existing and emerging trends in urban development within the region. It continues the forward-looking perspective, capturing the transformative messages of the New Urban Agenda (2016) with the current edition setting a much-needed agenda for a sustainable urban recovery across the region. The 2023 report is released in a year where progress against SDG 11 on 'sustainable cities and communities' is under review globally by the United Nations General Assembly.

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