Chapter 2:

Climate Change and International Development: What Have We Achieved Since the Adoption of the Paris Agreement?

Quick facts

1. Climate change has emerged as a critical factor shaping international development policy, with widespread implications.

2. Global climate negotiations and outcomes have not adequately addressed cities and other subnational entities, but this has begun to shift.

3. There have been several significant societal and technological developments since the Paris Agreement, but their impacts have been unevenly distributed.

4. The private sector is a critical source of expertise, innovation and resources for supporting urban climate action.

Policy points

1. The journey towards low-carbon futures is a shared responsibility, requiring collaborative policy and interventions across all scales.

2. To achieve the level of change necessary to keep global warming within relatively safe planetary boundaries, national and local governments need to move beyond piecemeal reforms.

3. Unifying global frameworks is key to achieving global climate and development goals.

4. Mobilization of additional finance and restructuring the financial architecture is required to ensure that climate adaptation, mitigation and loss and damage receive new and additional funding.

5. Addressing equity considerations in climate action remains an urgent global priority.

A central message of the *World Cities Report 2022: Envisaging the Future of Cities* was that ambitious, effectively targeted adaptation and mitigation efforts are crucial if urban futures everywhere are to be sustainable and resilient. As highlighted repeatedly throughout this report, cities are at the forefront of action to tackle climate change. This entails understanding the roles that cities worldwide have played to date, both in their own right and as part of a broader multi-level governance structure with national and regional governments. The critical role of urbanization has been identified as a "mega-trend" significantly impacting the climate crisis, while the policies and strategies adopted for building urban resilience and sustainability have far-reaching implications for vast numbers of individuals, communities and organizations globally.[1]

▬▬
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A key dimension of this trend is the promotion of effective climate action as a central part of international development programming and funding. Accordingly, the principal aim of this chapter is to assess progress (or, in multiple cases, lack thereof) since the adoption of the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015 at the Conference of the Parties (COP21). Specifically, it explores the role of climate change in shaping international development policy within the context of promoting sustainable urbanization since the Paris Agreement. Given this broad scope, the aim is to elucidate key thematic areas and indicative issues rather than provide detailed assessments, as these are covered in subsequent chapters.

The Paris Agreement is a legally binding treaty aiming to limit global temperature increases since the beginning of the industrial revolution to 1.5 degrees Celsius (°C) above pre-industrial levels. The central means of implementation is through a voluntary and non-enforceable system of nationally determined contributions (NDCs) to global reductions of greenhouse gas (GHG) emissions. The Paris Agreement identifies the critical role of local governments in addressing climate change and the NDC targets of many countries are underpinned by sector-based commitments that have specific urban relevance for subnational authorities as shown in Chapter 1. While the United Nations (UN) issues recommendations and guidelines of good practice, the extent to which these are followed varies considerably, as does the extent to which national governments consult with subnational and local governments, and/or include specific urban content in their NDCs.

The foregoing poses considerable challenges and increases the importance of global funding mechanisms, including Official Development Assistance (ODA), as a means for promoting appropriate urban climate action in low- and lower-middle-income countries. A related challenge hampering proactive urban climate action in ODA-recipient states is that in many countries, ODA (and indeed other funding) is required to flow to and through the national governments.[2] Subsequent disbursement to subnational and local governments may then be subject to delay, diversion of funds or imposition of additional conditions that hamper or dilute coherent and effective urban climate action (discussed further in Chapter 9).

2.1 Global Progress Since the Paris Agreement

Despite notable advances in policy and knowledge, the global response to the climate crisis since the formation of the UNFCCC has been widely criticized as inadequate, as evidenced by the escalating magnitude of the climate crisis. Consequently, the 2020s have been identified as a critical

decade for climate action, where radical measures are urgently required at the appropriate scale and pace to avoid catastrophic levels of global emissions and avert widespread disasters. Towns and cities are central to any such coherent initiatives.[3] Since 2015, there has been increasing public pressure on governments globally to take climate action. The

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Peoples' Climate Vote—the world's largest standalone public opinion survey on climate change—revealed that 80 per cent of the more than 73,000 respondents want their governments to have stronger climate commitments, prioritizing the well-being of people and nature.[4]

Since 2015, many bilateral and multilateral environment and climate agreements have been introduced globally. Degrees of implementation and impact on urban areas vary greatly. Several agreements have coalesced around specific thematic issues such as solar power and coastal

issues. The 2024 EU Nature Restoration Law—a first of its kind and a significant achievement for multilateralism—aims to restore at least 20 per cent of the land and sea areas in the European Union (EU) by 2030, and all ecosystems in need of restoration by 2050. Urbanization issues are repeatedly highlighted throughout the regulation text and key measures include no net loss on urban green spaces and tree canopy cover by 2030.[5]

A fully contextualized appraisal of progress since the Paris Agreement requires that this not be seen in isolation, but as one of the five complementary components of the global sustainable development agenda adopted by UN member states during an intense 18-month period from mid-2015 to December 2016. These international agreements underpin the global enabling environment and inform policy for national and urban governments on urbanization and climate action. Table 2.1 summarizes these agreements, which have significant implications for climate action and urbanization.[6] The Paris Agreement, 2030 Agenda for Sustainable Development (with 17 Sustainable Development Goals) (SDGs) and the New Urban Agenda (NUA) strongly emphasize the complex interconnections between local action and global processes of change. International development policies are domesticated or localized in diverse ways, with significant implications for building climate-resilient cities.

Flooded streets and buildings in Chiangmai, Thailand © 501room/Shutterstock

Table 2.1: Representation of the urban in international sustainable development policies and key agendas

| Agreement (date of agreement)	Scope of agreement	Relevance for cities, settlements and infrastructure	Relevance for addressing climate change risk
Sendai Framework for Disaster Risk Reduction (March 2015)	Global agreement for reducing disaster risks in all countries and at all levels. Highlights urbanization as a key driver of risk and resilience.	Identifies rapid urbanization as a key underlying risk factor for disasters and driver of resilience. Promotes shift from disaster response to disaster risk management and reduction through cooperation between national and local governments. Limited focus on the role of civil society.	Highlights the need to respond to systemic risk, including compound and cascading risks and impacts from natural, technological and biological hazards. Includes focus on chronic stressors and sudden shocks through governance, planning, disaster response, post-event recovery.
Addis Ababa Action Agenda (July 2015)	Global agreement arising from the International Conference on Financing for Development (United Nations, 2015a) emphasized the need for adequate financing at all levels of government, especially subnational and local, to support sustainable development, infrastructure and climate mitigation (UN-Habitat, 2016b).	Includes general comments on the importance of local actors and recognises the need for strengthening capacities of municipal and local governments. Commits to 'support' local governments to 'mobilise revenues as appropriate'. Offers little on how to get finance to support local governments addressing these commitments.	Financing a critical element of risk reduction in cities and settlements (see Section 6.4). Underlying variability of institutional arrangements inhibits development of universal framework.
Transforming our world: the 2030 Agenda for Sustainable Development (September 2015)	Global agreement adopted by 193 governments that includes the 17 Sustainable Development Goals (SDGs).	SDG 11 speaks explicitly to making cities 'inclusive, safe, resilient and sustainable'. Extensive reference to universal provision of basic services in other SDGs which will require substantial efforts in cities; equality and governance are also stressed. Focuses on national goals and national monitoring with insufficient recognition of key roles of local and regional governments and urban civil society in addressing most of the SDGs.	SDG 13 on climate action requires action in cities and settlements. Integrated approach can address underlying drivers of risk.
The Paris Agreement (December 2015)	Global agreement under UN Framework Convention on Climate Change: signed by 194 and ratified by 189 member states (05/01/21).	References the role of the local or subnational levels of government and cities as non-state actors.	Encourages cities to develop specific agendas for climate action (mitigation and adaptation).
The World Humanitarian Summit (May 2016)	Not an agreement, but a summit of 180 member states generating over 3,500 commitments to action and addressing the role of non-state actors in reducing risk of climate change related forced displacement of people	Includes five agreed 'core responsibilities' with relevance for urban areas, and commitments were made by professional associations, non-governmental organizations and networks of local authorities to address these in towns and cities.	Climate change likely to shape flows of refugees and migrants who are likely to live in highly exposed areas, particularly in low-income cities. However, 'meagre funding for collaboration, poor data collection and sharing' (Acuto, 2016) limits commitment effectiveness (Speckhard, 2016).

Agreement (date of agreement)	Scope of agreement	Relevance for cities, settlements and infrastructure	Relevance for addressing climate change risk
The New Urban Agenda (October 2016)	Global agenda adopted at UN Conference on Housing and Sustainable Urban Development (Habitat III) envisioned national urban policies and adaptation plans as a central device to inform subnational governments addressing sustainable development.	Intended as the global guideline for sustainable urban development for 20 years, seeking to provide coherence with other agreements. Focus on national policy and action. Limited recognition of urban governments or civil society as initiators and drivers of change.	Clearly frames roles for cities within national and international systems in contributing to sustainability (including low-carbon development) and resilience (including adaptation). Frames the role for cities within national and international systems, including an ongoing assessment of their contribution to sustainability and resilience (Kaika, 2017; Valencia et al., 2019).

Source: Dodman et al., 2022.

Each of these agreements has different lifespans, but of particular relevance to this chapter and international development policy generally are the Paris Agreement, the 2030 Agenda (2016-30) and the NUA (2016-36). To mark the midpoint of the 15-year span of the SDGs, in 2023 a special UN SDG mid-term review Summit was held in New York. The review of each SDG was led by the responsible UN lead agency. Accordingly, in the case of SDG 11 on Sustainable Cities and Communities, UN-Habitat's comprehensive review *Rescuing SDG 11 for a Resilient Planet*[7] indicated that current rates of progress would not enable the targets and indicators to be met. Initial progress on various targets had been set back or even undermined by the combined effects of the COVID-19 pandemic and the impact on food and energy availability and prices following the Russia-Ukraine conflict.

Indeed, the *Sustainable Development Report 2022* had already revealed that no single region was on track to fulfil SDG 11 and most of the others, as illustrated in Figure 2.1. The overall picture is that political ambition and financial commitment would need to be significantly increased if SDG 11 and many of the other SDGs are to be achieved by 2030.[8] A separate review of EU member states using official statistics demonstrated considerable progress, but also expressed reservations about prospects for achieving the targets by 2030.[9] Although not specifically focused on urban areas, SDG 13 on climate action has fared somewhat better. Oceania and all low-income countries are shown as being on track to achievement, while Latin America and the Caribbean, along with Sub-Saharan Africa and lower-middle-income countries, are progressing on track.[10]

Figure 2.1: 2022 SDG dashboards by region and income group
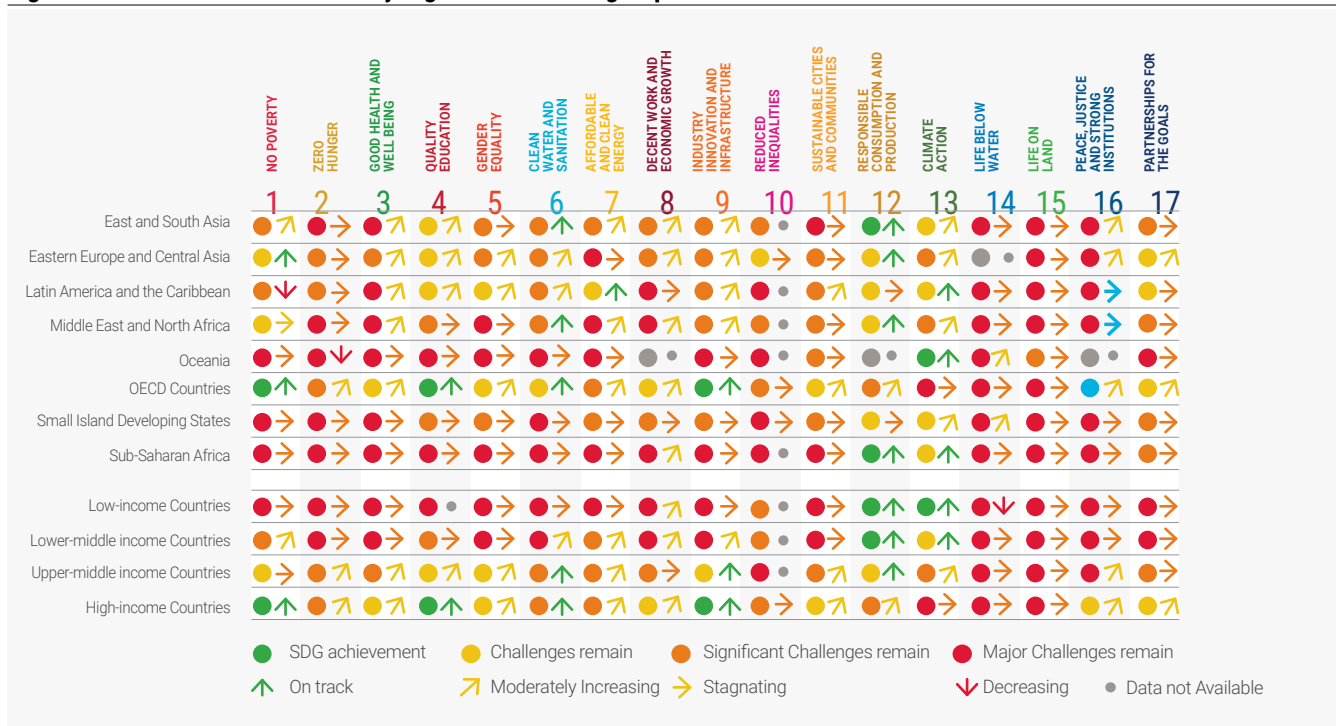
Source: Sachs et al., 2022.

2.1.1 The urban content of Nationally Determined Contributions

There is a substantial body of literature on the NDCs focused on issues such as transparency and implementability,[11] the sectoral implications of NDCs[12] and interlinkages with other global agendas such as the SDGs.[13] The role of non-state actors, including cities, for NDCs is evidently also receiving increasing attention.[14] The most recent analysis of the NDCs declared by 194 countries included 27 that had been updated and submitted for a second time by mid-2023.[15] More countries have reported NDCs, which fall into three clusters: strong, moderate and low or no urban content. Hence two-thirds of NDCs analyzed had strong or moderate urban content,[16] an increase over the previous analysis in 2022 as shown in Table 2.2. However, even this urban content is often vague and fragmented. The methodology of previous iterations differed so direct comparison is less straightforward. As discussed in Chapter 1, whether countries have high, moderate or low urban content in their NDCs is largely independent of their levels of urbanization.

Table 2.2 Extent of urban content in NDCs submitted in 2022 and 2023

| Urban content of NDCs	2022		2023	
	Number	%	Number	%
High urban content (Cluster A)	47	24	52	26
Moderate urban content (Cluster B	76	40	77	40
Low or no urban content (Cluster C)	70	36	65	34
Total	193	100	100	100

Source: compiled from UNDP et al., 2024.

Women cycling near the Leiden central station, Netherlands © Patrick Herzberg/ Shutterstock

How individual NDCs were produced and the degree to which urban local governments were involved in the process varies remarkably.[17] The analysis disaggregated the nature of the clusters of strong and moderate urban content in a stepwise manner. Initially, the numbers of countries that included mitigation and adaptation challenges and responses for each category, as well as urban climate hazards, were distinguished. This revealed some significant differences between Clusters A and B in Figure 2.2, but with mitigation and adaptation responses featuring more strongly in both clusters than challenges and hazards.

Figure 2.2: Number of NDCs with high and moderate urban content that address mitigation and adaptation challenges and responses, and urban climate hazards, 2023
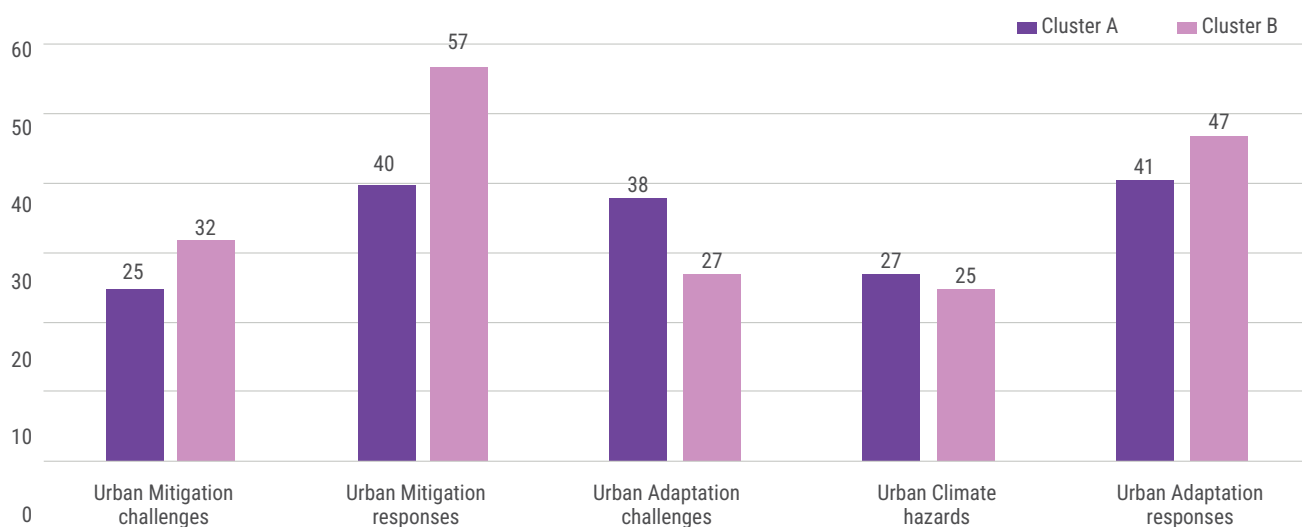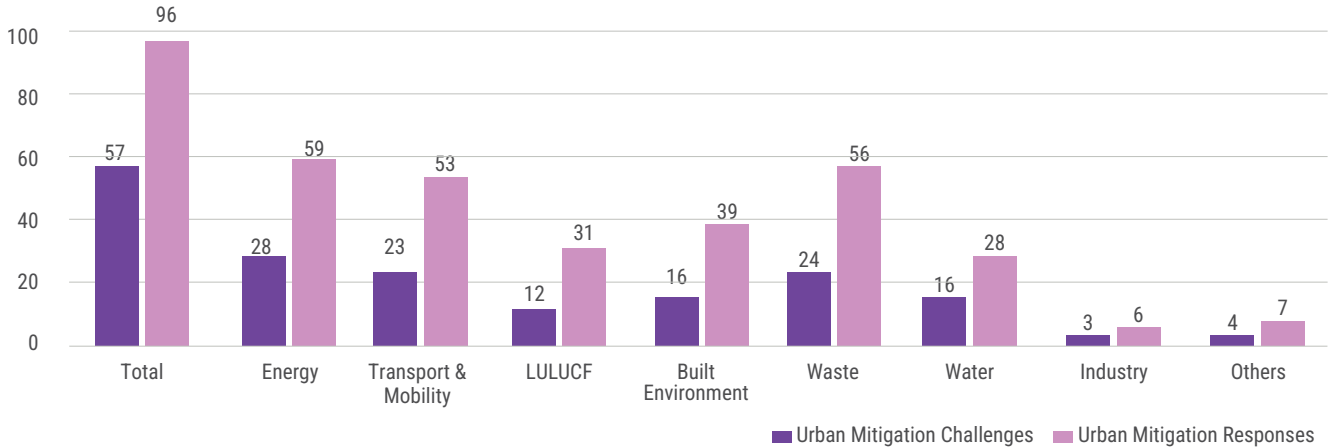

Source: UNDP et al., 2024.

The principal spheres of action under mitigation and adaptation are identified in Figures 2.3 and 2.4 respectively. These revealed very similar sectoral distributions within both Clusters A and B: in mitigation, energy, transport and mobility, and waste dominated, while in terms of adaptation, the leading sectors were infrastructure, water and coastal areas. The overall analysis was complemented by a representative sample set of country profiles. These provide deeper insights into the diversity of different countries' NDCs and their respective urban content, as well as different income categories and world regions. Straightforward generalization is therefore difficult.

Figure 2.3: Disaggregation of urban mitigation challenges and responses among Clusters A and B (2023)
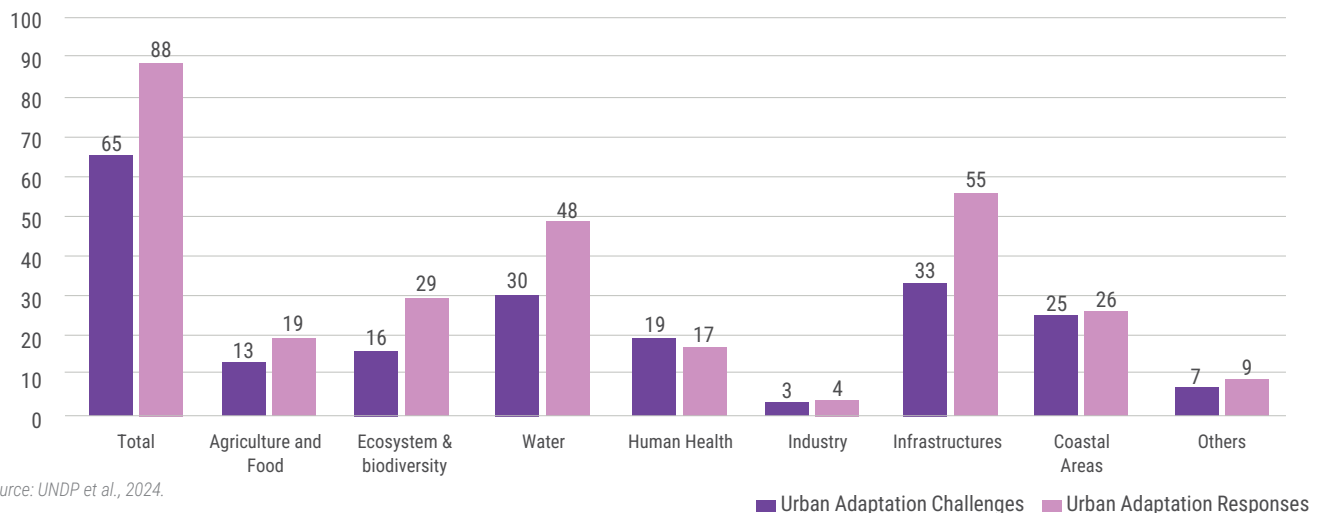

Source: UNDP et al., 2024.

Despite misgivings relating to climate action, especially at the national level, the journey towards net zero or low-carbon futures is a shared responsibility, and as such the broad-brush criticism of the lack of ambition and policy pitfalls by national governments needs to be transcended. While countries are progressing in their recent pledges, as evidenced by enhanced, higher-quality NDCs derived from increasingly inclusive processes involving subnational levels of government, as well as the mainstreaming of gender and youth considerations, among other concerns, the aggregate effect on global emissions remains highly inadequate. Similarly, the combined effect of adding up all the NDCs shows that current pledges are not capable of limiting global warming to 1.5°C above preindustrial levels.[18]

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Figure 2.4: Disaggregation of urban adaptation challenges and responses among Nationally Determined Contributions with high and moderate urban content, 2023

Source: UNDP et al., 2024.

2.2. Progress in Tackling Climate Change Measured by SDG 11

The 2023 global survey by the Organisation for Economic Co-operation and Development (OECD) and the Sustainable Development Solutions Network (SSDN) on the role of cities and regions in implementing the SDGs highlighted significant actions that cities are taking globally to localize and implement the SDGs, as well as facilitators and barriers to achieving them.[19] Table 2.3 provides an indicative snapshot of policies and actions adopted by diverse cities for the implementation of the SDGs.

Table 2.3: Snapshot of policies and actions adopted by diverse cities for implementation of SDGs

Type of action	Example
Policies and actions adopted for the implementation of the SDGs	▪ The city of Tallinn, Estonia, has aligned its strategic and operational targets, integrating SD indicators to drive sustainable development. ▪ The city of Zagreb, Croatia, tracks its performance through SDG indicators that are part of the city's urban development strategy's annual reporting and are directly linked to the national development strategy. ▪ The autonomous province of Bolzano, Italy, has created an alliance for sustainability with research institutes and universities, fostering joint efforts in implementing the SDGs in the province. ▪ The region of Catalunya, Spain, has created the Catalonia 2030 Alliance, a partnership of public and private entities willing to work together to accelerate the achievement of the SDGs. ▪ The city of Manresa, Spain, has established a subsidy scheme for dissemination and training on the 2030 Agenda in its municipality. ▪ The city of Florence, Italy, has integrated the SDGs into its 2030 Agenda strategy. ▪ The state of Brandenburg, Germany, has established discussions fora within and for municipalities and civil society to advance the implementation of the SDGs in its territory.

Source: OECD & SDSN, 2024.

The survey reveals that political leadership is a critical success factor (76 per cent) for local implementation of the SDGs, with dedicated strategies for the SDGs and indicator systems also emphasized. Insufficient financial resources (64 per cent) and governance challenges, shifting political priorities (52 per cent) and insufficient vertical coordination represent considerable challenges to implementation of the SDGs at the city scale. Awareness-raising campaigns are the most common action (62 per cent) reported to localize the SDGs, followed by a dedicated strategy or action plan for the SDGs (56 per cent).[20]

UN-Habitat's report to the High-level Political Forum on Sustainable Development (HLPF) assessed progress and on that basis addressed the requirements for the second half of the implementation period if the targets of SDG 11 are to be achieved. Related to progress since the Paris Agreement, the focus of SDG 13 is on climate action, but none of its targets and indicators specifically address urban areas. This makes it impossible to assess urban contributions to progress against SDG 13 beyond self-assertions being made by urban governments to that effect, which are inevitably hard to verify.

Over 2,300 local and regional jurisdictions in over 40 countries have formally declared climate emergencies in response to the effects of a changing climate, such as flooding and heatwaves.[21] Populations covered by these jurisdictions exceed 1 billion citizens, many of which are in urban areas of varying sizes. Despite these pronouncements and over 30 years of urban climate initiatives, "there remains a persistent concern that urban climate action may at best lack sufficient urgency and at worst exacerbate existing urban inequalities while falling short of addressing the dire challenges faced".[22]

2.2.1. Target 11.5: Reduce the adverse effects of

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Climate change crosscuts most aspects of SDG 11 but here the specific climate change-related dimensions, which constitute a direct component of three targets and four indicators, are addressed as follows:

▪ Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations, and its three indicators,

° 11.5.1: Number of deaths, missing persons and persons affected by disaster per 100,000 people, and

° 11.5.2 Direct economic loss attributed to disasters in relation to global GDP.

° 11.5.3 (a) Damage to critical infrastructure and (b) number of disruptions to basic services, attributed to disasters

The evidence on the two components of Indicator 11.5.1—which correspond to Targets A and B of the Sendai Framework for Disaster Risk Reduction—showed opposite trends: while global average mortality fell by 47 per cent, from 1.64 persons per 100,000 over the period 2005-15 to 0.86 for 2012-21, the global average number of disaster-affected persons per 100,000 population increased by 76 per cent over the same period, from 1,198 during 2005-15 to 2,113 during 2012-21. These data exclude COVID-19-related cases. Globally, on average every year 47,337 people died and another 151 million were affected as a result of disasters during the 2015–21 period.[23] The most plausible explanation for these two variables moving in opposite directions is that enhanced early warning and rapid response capacities in many urban areas have helped to reduce the number of fatalities per extreme event, but that the increasing number, geographical distribution and severity of disasters is increasing the number of people affected.

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These global averages mask considerable variation at all scales, with greater vulnerability in low-income countries and Small Island Developing States (SIDS). Furthermore, these are aggregate rather than specifically urban data, for which accurate figures are not available. In addition to accelerated action and enhanced funding for disaster risk reduction (DRR), a key priority over the remaining SDG period is further development and operation of effective early warning systems[24]—not least in urban areas—to build on considerable progress achieved by 2021. Focusing in future on collecting more disaggregated urban-specific data for monitoring and evaluation is also critical.

Data on Indicator 11.5.2 are also available only as national aggregates and show that poor and vulnerable states were impacted disproportionately hard. The global total in 2021 was some US$80 billion (0.57 per cent of the total GDP of reporting countries), whereas the numerically low US$4.5 billion reported by least developed countries corresponded to 2 per cent of reporting countries' aggregate GDP, and for SIDS the losses of US$133 million equated to 2.4 per cent of their aggregate GDP.[25] These figures demonstrate that the poorer, smaller and more vulnerable a country is, the greater the relative economic impact of disaster loss. This

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therefore underlines the importance of global governance interventions through mechanisms such as the recently established Loss and Damage (L&D) Fund.

On Indicator 11.5.3, the respective figures for 2015-21 amounted to over 1 million critical infrastructure units (including schools and hospitals, of which the former accounted for over half the total) and 6.5 million basic service disruptions due to disasters. Again, the losses were proportionately greatest in low-income countries and SIDS. Greater resilience of national infrastructural networks was identified as a top priority for the remainder of the period to 2030, not least to minimize damage and promote rapid and appropriate reconstruction.[26] These issues are elaborated further in Chapter 5.

Several key points warrant highlighting in this context. First, no precise definition of disasters has been included, allowing local flexibility but complicating the task of global aggregation.[27] In part, besides reflecting geographic differences, this was also the result of pressure from organizations representing the urban poor to include the effects of chronic, everyday environmental conditions that accumulate to become disasters.[28] Second, none of the Target 11.5 indicators explicitly includes climate change impacts, so the extent to which these have been included will vary, both because perceptions differ on whether and to what extent a given disaster could be attributed to the effects of climate change, and because the frequency and severity of climate-induced extreme events (and when they become identified as disasters) differs geographically. Third, as with all the targets and indicators in SDG 13, none of the indicators explicitly or exclusively report on urban disasters. In the absence of geographically disaggregated data, there is therefore no way to determine the absolute or relative prevalence of disaster impacts in urban areas. Fourth, as a reflection of these factors, there is very little independent literature on progress with Target 11.5 in urban areas.[29]

### 2.2.2. Target 11.6: Reduce the environmental impact of cities

Another relevant area within SDG 11 in relation to climate change is Target 11.6: "By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management". This includes Indicator 11.6.2 on air pollution: "Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)".

Within the UN system, responsibility for this indicator rests with the World Health Organization (WHO). Though WHO introduced stricter new air quality standards in 2021, 99 per cent of the global urban population live in areas that exceed them: urban air pollution from sources such as road traffic, industrial emissions and waste combustion cost some 4.2 million lives in 2019 alone.[30] Despite the emphasis on improving air quality in both the SDGs and NUA, monitoring is not yet undertaken systematically across many urban areas, with often a small number of measuring points that might not be in the most polluted areas. The level of particulate matter measured varies (not all can yet record PM2.5, for example) and maintenance of facilities is not consistent.[31]

While small towns still receive little attention[32] and in most world regions fare better in terms of air pollution than larger cities, in Eastern and Southeast Asia the reverse is the case, while in North America and Europe the levels are comparable. Nevertheless, there are considerable intra-urban and regional differences (Figure 2.5).[33] Given the gaps in widespread and systematic local monitoring, earth observation, remote sensing, big data and artificial intelligence (AI) are increasingly being explored to provide standardized approaches and scalable data, in part through use of the new UN standard degree of urbanization approach to defining urban areas (discussed in more detail in Chapters 1 and 5).[34]

Figure 2.5: Population-weighted 2019 PM2.5 concentrations for regional groupings
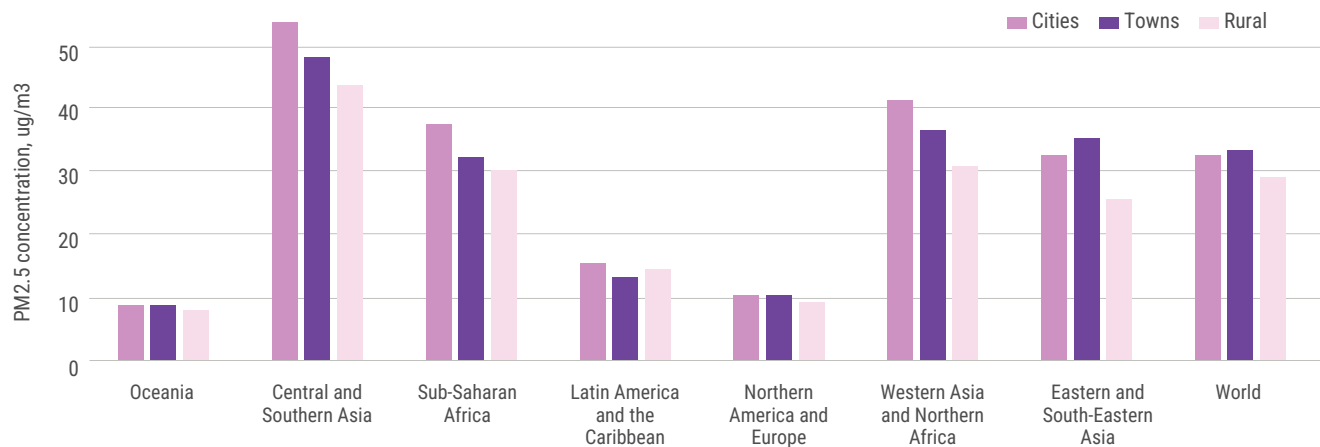
Source: UN-Habitat, 2023b.

2.2.3 Target 11.b: Implement policies for inclusion, resource efficiency and disaster risk reduction

Another area of SDG 11 that is pertinent to climate action is Target 11.b: "By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels."

Of particular relevance in the urban context is Indicator 11.b.2: "Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030." This indicator is the same as Target E of the Sendai Framework. By the end of 2022, 102 countries reported having local governments with DRR strategies, compared to 51 in 2015, with an average of 72 per cent of local governments per country having such strategies.[35] Although not specifically stated, these would have been principally large and intermediate urban governments, reflecting relative institutional capacity and greater likelihood of participation within international city networks and membership organizations. Since this indicator requires collation by national governments, verification and additional detail cannot be obtained independently.

Nevertheless, the clear implication is that global and national governance institutions should prioritize assistance to the establishment of DRR strategies and capacities in small and intermediate urban areas during the remainder of the SDG and Sendai Framework implementation periods. This will also promote wider achievement of urban resilience by 2030, which is the principal focus of the Making Cities Resilient 2030 initiative, which has supported over 1,600 cities in enhancing their DRR preparedness.[36]

2.2.4 Voluntary Local Reviews of progress with implementation of the SDGs

The final element of SDG implementation addressed in this chapter focuses on the integrated self-assessment by individual local urban governments of their progress—Voluntary Local Reviews (VLRs)—as well as the even more recent Voluntary Subnational Reviews (VSRs) by regional governments. Following the withdrawal of the United States (US) from the Paris Agreement, New York City submitted its own local assessment in 2018, which became the first VLR, built around the SDGs as a local counterpart to Voluntary National Reviews (VNRs).[37] This catalyzed a growing movement, with 106 submitted by October 2021, 149 by mid-2022 and 174 by the end of 2023.[38]

Progress on VLRs and their role in supporting implementation of SDGs has been well documented in recent years.[39] Each city's VLR is informed by differing key themes and emphases within the broader framing of the SDGs and NUA. The nature, robustness and degree of detail within VLRs vary greatly; while some are selective in coverage, others are based on detailed assessments. Some of the most robust,

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such as those produced by eThekwini and Cape Town in South Africa or Buenos Aires in Argentina, are based on comprehensive mapping of their activities onto all the SDGs, accompanied by case studies of flagship projects[40] that are clearly linked to urban resilience building and wider climate change initiatives. These exercises have led to some shifts in the focus of investment and recurrent expenditure, to enhance synergies across SDGs or align activities more appropriately with wider climate action commitments. Several overarching benefits of the VLRs include: setting local priorities and policy alignment and integration for sustainable development; providing localized data and experiences to inform VNRs; and evidence-based monitoring tools, all of which support implementation of the SDGs.[41]

Beyond VLRs and other diverse mechanisms, city climate action for implementing the Paris Agreement have been reported through recent high-level initiatives such as the Race to Resilience campaign of the UNFCCC and the Sharm el-Sheikh Adaptation Agenda. In combination, these indicate significant progress around several core themes such as nature-based solutions (NbS)[42], early warning systems, community engagement, heat stress response, ocean coastal systems, infrastructure (see Chapter 6), waste and water management, among others. Despite existing efforts by cities on climate action and localizing the global development agendas, illustrated throughout this report, urgent acceleration of efforts is required to reach net zero and create

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more sustainable futures for all, especially the most vulnerable (see Chapter 4). Particular attention needs to be paid to fostering enabling environments, localized finance, political support and collaboration across scales. Globally documented evidence indicates that climate adaptation actions are largely fragmented and incremental, with limited evidence of transformational adaptation and risk reduction outcomes.[43] This highlights the importance of advancing more effective, locally-led adaptation across rural and urban areas globally.

Aerial view of flooded homes in Kurigram, Bangladesh, highlighting the devastating impact of recent floods on the community. © amdadphoto/Shutterstock

In view of the growing movement to produce VLRs, United Cities and Local Governments (UCLG), UN-Habitat and the Joint Research Centre of the European Commission have produced VLR guidelines, good practice guidance and templates.[44] There is no one defined methodology or approach to developing VLRs. Most recently, UN-Habitat and UCLG developed an action-oriented VLR Methodology to support evidence-based local-level SDG recommendations to drive change from the bottom-up.[45] The diversity of VLRs can be viewed as a significant opportunity to promote knowledge and best practice exchange across varied contexts and typologies. Cities are also increasingly partnering with various organizations such as research institutes and city networks in developing their VLRs and associated monitoring (an example being the partnership between the City of Orlando in the US and Local Governments for Sustainability (ICLEI).[46]

Emphasis on inclusivity in VLR development is mounting to ensure meaningful participation and incorporate local communities, minorities and vulnerable groups into decision-making processes. Relatedly, VLR development has also catalyzed the use of open data dashboards to gather data and display progress, including by the State of Hawaii (US) and the cities of Los Angeles (US) and Helsingborg (Sweden).[47] These accessible platforms help to keep cities accountable to their citizens and relevant stakeholders.[48]

2.3 Focus Areas and Milestones in the UN Conference of the Parties in Strengthening Urban Climate Action

Historically, the UNFCCC COP[49] negotiations and outcomes have not adequately addressed cities and other subnational entities. This has begun to shift in recent years. More specifically, the centrality of cities in addressing the climate crisis has been increasingly recognized, as evidenced by the strong urban representation at both COP27 and COP28 and an unparalleled level of mayoral participation. Table 2.4 presents key outcomes and milestones since COP21 in 2015, with particular reference to the implications for urban contexts. Over the past decade, urban issues have become an increasing focus in international policy debates and landmark reports.[50] Notably, urban-specific chapters were included in the 2014 IPCC AR5 report for the first time, the 2022 IPCC AR6 report is strongly focused on urban issues, and the IPCC Special Report on Climate Change and Cities was commissioned in early 2024.

The centrality of cities in addressing the climate crisis has been increasingly recognized, as evidenced by the strong urban representation at both COP27 and COP28 and an unparalleled level of mayoral participation

Table 2.4: Summary of COP focus areas and indicative milestones since the Paris Agreement

Paris and beyond to 2023	Examples of key milestones and outcomes linked to UNFCCC processes	Implications for urban contexts
COP21 (Paris, 2015)	▪ The adoption of the *Paris Agreement* marked a significant milestone in global climate governance: "all levels of governments", "cities and other subnational as Non-Party Stakeholders. ▪ Emphasis on limiting global warming below 2°C and striving for 1.5°C. ▪ Parties invited to prepare intended nationally determined contributions (iNDCs), at COP19 in Warsaw. ▪ iNDCs became binding NDCs following Paris Agreement ratification in 2016. ▪ Gender equality recognized as guiding principle for effective action.	▪ Ambitious mitigation efforts required to reduce GHGs from building, transportation and energy systems, integration of climate resilience into urban planning and infrastructure development and enhanced multi-level governance.
COP22 (Marrakech, 2016)	▪ Marrakech Partnership for Global Climate Action (MPCGA) encourages collaboration between national governments, cities, businesses and civil society to enhance climate action. ▪ "Human settlements" established as one thematic area for Climate Action Pathways to achieve MPGCA.	▪ Emphasis on multi-stakeholder partnerships and local leadership in driving climate action at the urban level.
COP23 (Bonn, 2017)	▪ Talanoa Dialogue process was initiated, aiming to facilitate inclusive and participatory discussions to enhance climate ambition. ▪ Precursor to the Global Stocktake, with shared aims.	▪ Emphasis on engaging local communities, promoting dialogue and incorporating diverse perspectives in urban climate planning and decision-making processes.
COP24 (Katowice, 2018)	▪ Focused on attempts to finalize the "rulebook" for the implementation of the Agreement—emphasis on transparency, accountability and monitoring of climate actions.	▪ Urgent need for robust urban data collection and reporting systems to track progress, mechanisms for evaluating the effectiveness of climate actions, and ensuring accountability in urban climate governance.
COP25 (Madrid, 2019)	▪ Emphasis on urgency of enhancing climate ambition to bridge the emissions gap and meet the goals of the Agreement. ▪ Recognition of the need for increased financing, technology sharing and capacity building to support climate action in developing countries. ▪ Parties to UNFCCC agreed on a five-year enhanced Lima Work Programme on Gender and a Gender Action Plan (GAP).	▪ Centrality of accessible climate finance to support sustainable urban development and gender considerations in climate action. Promotion of low-carbon infrastructure, and enhanced climate resilience in cities, particularly in vulnerable regions.
COP26 (Glasgow, 2021)	▪ Glasgow Climate Pact emphasizes "multi-level and co-operative action" and urgency of enhancing ambition of action and finance for mitigation and adaptation to address the gaps in implementing the long-term global goals. ▪ Establishment of the Glasgow–Sharm el-Sheikh Adaptation Agenda to promote immediate and tangible adaptation and resilience solutions (for Non-Party Stakeholders).	▪ Cities Race to Zero and Cities Race to Resilience campaigns established through the Sharm-el Sheikh work programme as opportunity to showcase action and drive ambition, according to city's contextually relevant local landscape.
COP27 (Sharm el-Sheikh 2022)	▪ Establishment of L&D Fund. ▪ COP27 Presidency launched the Sustainable Urban Resilience for the Next Generation (SURGe) Initiative, developed in collaboration with UN-Habitat and facilitated by ICLEI. Endorsed by 70+ global partners. ▪ SURGe was officially launched at the Urban and Housing Ministerial Session on Cities and Climate Change at COP27. ▪ First Movers Coalition (FMC) launched partnership between the World Economic Forum and US Special Presidential Envoy for Climate to help decarbonize the world's heavy-emitting sectors through private sector demand for decarbonization technology.	▪ L&D milestone for urban climate justice but many critical operational and other issues unanswered. ▪ SURGe aims to enhance and accelerate local and urban climate action through multi-level governance, engagement. ▪ Cities will benefit from increasing investment and uptake of decarbonization technologies
COP28 (Dubai, 2023)	▪ First Global Stocktake (GST)confirmed that Parties are *not* on track to achieve ambitions of Paris Agreement. ▪ Parties agreed targets for Global Goal on Adaptation (GGA) and its framework. ▪ Historic agreement on the operationalization of funding arrangements for addressing L&D ▪ Closing Agreement signals the "beginning of the end" of the fossil fuel era by creating initial foundations for a just transition.	▪ Outcome document of first global stocktake. ▪ Important role and active engagement of non-Party stakeholders including cities and subnational authorities, as well as collaborative action strongly recognized.

Table 2.5 provides an indication of progress under the Paris Agreement with respect to multi-level action in the climate emergency response.

The contrast between the period before and after the Paris Agreement is remarkable, demonstrating its importance in galvanizing positive actions by local and regional governments

The contrast between the period before and after the Paris Agreement is remarkable, demonstrating its importance in galvanizing positive actions by local and regional governments under each heading in the table, from the declaration of a climate emergency to the adoption of ambitious 2030 targets and the increased involvement of subnational governments in their respective NDC processes. These milestones are considered in further detail in the chapter. Since 2015, cities and subnational governments have increasingly engaged in intergovernmental climate change processes, elevating their voices and influence, often through Member States and the international community.

Table 2.5: Taking stock of multi-level action and urbanization in the climate emergency response

Indicator	Before Paris (2015)	After Paris (2015-2023)
Local and regional governments that have declared a climate emergency	0	2,200+
Local and regional governments that have committed to ambitious 2030 targets	<100	1,000+
NDCs that have raised ambitions through the engagement of local & regional governments	N/A	60+

Indicator	Before Paris (2015)	After Paris (2015-2023)
Percentage of NDCs with strong urban components	N/A	24%
Relevant UNFCCC decisions	▪ 2010: COP16 "governmental stakeholders" ▪ 2013: COP18	▪ 2015: Paris Agreement "all levels of governments", "cities and other subnational as Non-Party Stakeholders" ▪ 2021: Glasgow Climate Pact "multi-level and cooperative action"
Inside UNFCCC	▪ 2007: LGMA Climate Roadmap ▪ 2008: European Covenant of Mayors ▪ 2009: Local Government Climate Lounge ▪ 2010: Parliamentarians and Mayors Forum ▪ 2013: ADP 2.3 Workshop, Ministers-Mayors Forum, ▪ 2014: SB40 Forum, NAZCA Portal, Lima-Paris Action Agenda, Compact of Mayors	▪ 2016: Global Covenant of Mayors ▪ 2016: Marrakech Partnership Human Settlements Action Pathway ▪ 2018: Global Environment Facility Sustainable Cities Integrated Programme ▪ 2018: IPCC Cities and Climate Change Conference and Action Agenda ▪ 2018: Cities and Regions Talanoa Dialogues ▪ 2019: SB56 COP Presidency Multi-level action event ▪ 2020: Cities Race To Zero ▪ 2021: Cities: Race To Resilience, RegionsAdapt, LGMA Multi-level Action Pavilion ▪ 2022: SURGe Initiative, Ministerial Meeting in Urbanization and Climate Change, IPCC AR6 Summary for Urban Policy Makers Action Event
Outside UNFCCC	▪ 2010: UNDRR Making Cities Resilient ▪ 2010: CBD Biodiversity 10Year Action Plan for Cities, Subnational Governments and other Local Authorities	▪ 2016: SDG 11, NUA ▪ 2018: Local2030, U20 as G20 Engagement Group ▪ 2019: GAP Fund ▪ 2020: MakingCitiesResilient 2030 ▪ 2021: G20 Localization Working Group ▪ 2022: Kunming-Montreal Global Biodiversity Framework Target:12, 2nd 10-Year Action Plan, U7 as G7 Engagement Group ▪ 2023: G7 Roundtable on Subnational Climate Action

Source: ICLEI, 2023.

As evident in Table 2.5, significant urban initiatives focused on multi-level governance have been launched alongside recent COPs, such as the Cities Race to Zero and Cities Race to Resilience campaigns at COP26, explained in further detail in Table 2.6 below. Since its launch in 2021, the Race to Resilience Campaign has grown considerably and as of 2023 included 647 collaborating members, as well as an array of subnational governments (86 cities and 78 regions) that had joined through Cities Race to Resilience or RegionsAdapt.[51] Meanwhile the SURGe Initiative, launched at COP27, aims to accelerate local and urban climate action through multi-level governance, engagement and delivery through five integrated tracks, contributing to achieving the Paris climate goals and SDGs. The SURGe Initiative was developed under the leadership of the COP27 Presidency in collaboration with UN-Habitat and facilitated by ICLEI through the Local Governments and Municipal Authorities Constituency (LGMA).[52] Indeed, advocacy and campaigning by city networks such as ICLEI have been central to the establishment

and progress of these key initiatives. By 2023, over 180 partners had endorsed the initiative.[53]

Significant urban initiatives focused on multi-level governance have been launched alongside recent COPs, such as the Cities Race to Zero and Cities Race to Resilience campaigns at COP26

Table 2.6: Global climate action: Key initiatives underpinning the inclusion of non-party stakeholders

Initiative	Summary Description
Race to Resilience	▪ Overarching global campaign for catalyzing global ambition on accelerating investment and implementation of adaptation solutions. ▪ The principal goal of the Race to Resilience is to increase the resilience of 4 billion people living in vulnerable communities by 2030, via partner support, tools and resources.
Cities Race to Resilience	▪ Focuses on encouraging cities to join and pledge their commitment addressing climate change via the global Race to Resilience campaign, coordinated by the UNFCCC high level climate champions. ▪ Aims to foster leadership and support from cities, regions, businesses and investors to help frontline communities build resilience and adapt to the impacts of climate change. ▪ C40 Cities, CDP, GCoM, ICLEI, Resilient Cities Network, UCLG, WWF and the World Resources Institute (WRI) collaborated to mobilize and launch Race to Resilience in July 2021.
Race to Zero	▪ Global campaign launched by the COP26 Presidency and High-Level Climate Champions to foster leadership and support from businesses, cities, regions and investors committed to the Paris Agreement goal to hold global average temperature increase below 1.5° Celsius. ▪ Partners and members focus on progressing towards a resilient, zero carbon transition that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth.
Cities Race to Zero	▪ City-focused track where cities are uniting to demonstrate their support for inclusive climate action in line with the goals of the Paris Agreement. ▪ Members pledge to reach net zero in the 2040s or sooner, or by mid-century at the latest, in line with global efforts to limit warming to 1.5° Celsius. ▪ Partners are collaborating to recruit 1,000 cities to the Race to Zero.
The 2030 Breakthroughs (mitigation)	▪ The Breakthrough Agenda was launched by 45 world leaders at COP26 and is a commitment to work together this decade to accelerate innovation and deployment of clean technologies, making them accessible and affordable for all. ▪ To kick-start this Agenda, countries endorsed goals and identified various "2030 Breakthroughs" that identify tipping points for key sectors of the global economy to achieve the race to zero emissions by 2050.
The Sharm el-Sheikh Adaptation Agenda (SAA) (adaptation)	▪ Global adaptation solutions agenda (for Non-Party Stakeholders) launched at COP27 outlining aspirational adaptation outcomes for global adaptation action towards 2030, and to inform state and non-state adaptation agendas. ▪ Aims to facilitate public-private collaboration and partnerships to address existing implementation, finance and planning gaps. ▪ Outlines near-term solutions for facilitating adaptation and resilience across all systems, in support of the goals of Race to Resilience.

Source: Based on report team's review.

Since the Paris Agreement, advocacy by city networks has strongly supported multi-level governance and the increasing prominence of cities and subnational governments in COP negotiations and international fora addressing climate change

Since the Paris Agreement, advocacy by city networks has strongly supported multi-level governance and the increasing prominence of cities and subnational governments in COP negotiations and international fora addressing climate change. Table 2.7 provides a spotlight on COP28 key initiatives and endorsements which illustrates this increasing prominence, as well as the growing emphasis on NbS and gender considerations in pursuit of the goals of the Paris Agreement. Particularly notable for COP28 is progress on the loss and damage mechanism and the first global stock take (GST) of the Paris Agreement, which confirmed Parties are not on track to achieve its targets. Most parties in their submissions to the GST made specific references to multi-level action and urbanization. The launch of the Coalition for High Ambition Multi-level Partnerships is a further key mechanism to enhance cooperation between national and subnational governments in the development, financing, implementation and monitoring of climate strategies and action, enabling increased contributions from subnational governments in further enhancing NDCs. Despite these notable advances, cities and subnational authorities are still marginalized in formal COP negotiation processes.

Table 2.7 Key initiatives and endorsements on climate action from COP28

Global stocktake and local stocktakes	▪ First global stocktake of the Paris Agreement concluded at COP28: an official mechanism to assess progress towards 2015 Paris Agreement. ▪ In 2023, over 25 cities and regions across six continents (including 9 in the Global South) hosted "local stocktakes" under the banner of #Stocktake4ClimateEmergency, as subnational contributions to the GST, many of which were supported by youth communities. ▪ These facilitate consultations between national and subnational governments, as well as civil society, in preparation for NDCs and are supported by the LGMA (of which ICLEI is the key focal point).
Loss and damage	▪ Historic agreement on the operationalization of funding arrangements for addressing L&D.
Multi-level action	▪ Unequivocal momentum behind multi-level action: over 15 paragraphs in the COP28 UAE Consensus contain specific references to local and subnational governments, multi-level action and urbanization.
Coalition for High Ambition Multi-level Partnership (CHAMP)	▪ Launched by UAE COP28 Presidency and Bloomberg Philanthropies. ▪ Fosters multi-level governance and collaboration. ▪ Sets out new process for how subnational governments can contribute NDCS. Nearly US$500 million mobilized toward urban climate action. ▪ 70+ nations signed CHAMP for Climate Action.
Local Climate Action Summit	▪ First ever Local Climate Action Summit attended by over 300 subnational leaders. ▪ Signals new phase of collaboration between all levels of government.
NbS	Nature Positive for Climate Action Call to Action: ▪ Joined by over 150 businesses and financial institutions. ▪ Contributes to delivery of Sharm El-Sheikh Adaptation Agenda and the 2030. ▪ Breakthroughs, committing to nature focused targets, disclosure and investments. Urban Nature Program: ▪ Launched by diverse partners (including World Bank, UN Environment Programme (UNEP), ICLEI, WRI and the International Union for Conservation of Nature (IUCN) at the Local Climate Action Summit). ▪ Showcases lighthouse cities exemplifying global leadership. ▪ Focus on developing a pipeline of ambitious green urban infrastructure and NbS projects that address climate change.
COP28 Gender Responsive Just Transitions and Climate Action Partnership	▪ Major political achievement and initiative for enhanced recognition of gender perspectives in climate action. ▪ Endorsed by 78 national governments.

2.4. International Development Policy and Climate Financing: Implications for Urban Contexts

While the interconnections between climate change and urbanization are increasingly recognized, cities have highly inadequate climate funds for mitigation and resilience building.[54] The above-mentioned global agendas have been widely criticized for their lack of clarity and ambition on finance, particularly at finer urban scales. For example, while the Addis Ababa Action Agenda, SDGs and NUA recognize the need for widespread reform of global financial systems, they do not adequately consider what such reforms might entail in practice at subnational or city scales.[55] Critics argue that global agencies often lack the necessary commitment and capacity to drive transformation of financial systems to ensure that poverty reduction, social justice and equity are achieved on the ground across diverse urban, peri-urban and rural contexts.[56]

There are major gaps in urban adaptation finance, accounting for under 10 per cent of total climate finance from both the public and private sectors

(as discussed in Chapter 9 in greater detail). Cities, municipalities and subnational governments have struggled to access and mobilize adequate financing to implement climate strategies, often due to mismatches between funders' requirements and subnational governments' financial needs. Diverse finance mechanisms such as municipal green bonds have received increasing attention over the past decade and are well documented in previous World Cities Reports.[57] The centrality of climate justice and inclusivity for such mechanisms have been increasingly emphasized as they continue to proliferate, particularly across urban Africa and Latin America.[58] This is critical to all emerging and mainstream urban finance mechanisms to avoid the production and reproduction of social, economic or environmental injustices embedded in the built environment.

There are major gaps in urban adaptation finance, accounting for under 10 per cent of total climate finance from both the public and private sectors

Mobilization of further private finance, particularly for urban adaptation, is urgently required.[59] As discussed in Chapter 9, a far larger share of climate finance at present is being directed towards mitigation than adaptation programmes: a major reason is that returns on urban investment are considerably lower and slower for adaptation than for mitigation activities (such as wind or solar power generation). More urban private financing can be supported through greater emphasis on "de-risking" climate finance led by government intervention and more supportive enabling policy environments, amongst other factors.[60]

A far larger share of climate finance at present is being directed towards mitigation than adaptation programmes: a major reason is that returns on urban investment are considerably lower and slower for adaptation than for mitigation

ODA plays a key role in bridging urban development and climate agendas.[61] The extent to which ODA and other financial flows for promoting climate action include explicitly urban components, and whether this represents a step change since the Paris Agreement, cannot easily be assessed without specific detailed research. ODA records focus predominantly on sector-specific funds disbursement with limited urban-specific details per country. Additionally, there is great diversity regarding how ODA flows are reported and presented. Besides, not all urban components are intended for disbursement to urban governments to spend; a substantial proportion is very likely to be spent by central government departments and agencies on urban issues.

Urban environmental and climate change issues have evidently become an increasing ODA focus by multiple countries. For example, in the case of the United Kingdom (UK), bilateral programming has included several significant initiatives in cities in Africa, Asia and other developing regions, spanning disaster-resistant planning, knowledge exchange and pro-poor resilience building.[62] By demonstrating donor confidence and sharing capital and/or operating costs, ODA plays a key role in de-risking private commercial investments through reducing the perceived or actual risks

Urban environmental and climate change issues have evidently become an increasing ODA focus by multiple countries

associated with investing in low- and middle-income countries. Thus, ODA helps to leverage greater financial flows towards climate action, including private sector investments, philanthropic contributions and multilateral climate funds.

Beyond direct provision of finance, ODA can play a critical role in urban resilience building through co-benefits such as capacity building and supporting the development of enabling legal frameworks, regulatory systems and institutional arrangements for facilitating climate action. This notwithstanding, the extent to which dedicated climate finance is

additional to ODA in line with the UNFCCC's "additionality" clause[63] has been under increasing scrutiny, particularly in relation to adaptation activities.[64] Recent research found that "93 per cent of the climate finance reported by wealthy countries between 2011 and 2020 was taken directly from development aid" and "only three countries (Luxembourg, Norway and Sweden) have consistently surpassed the commitment to provide 0.7 per cent of their GNI as ODA as well as providing large per capita amounts of climate finance".[65]

There is little clarity on the specific urban component of this funding. Furthermore, estimates show that of the US$73.1 billion climate finance through the public sector via bilateral and multilateral channels in 2021, almost two-thirds (US$49.5 billion) were provided as loans, thereby risking further indebting urban local governments in low- and lower-middle-income country contexts.[66] Consequent debt-service repayment burdens may create additional pressures for cities to increase taxes or reduce public spending on essential services including healthcare, education and infrastructure projects, thereby inadvertently undermining climate resilience.

2.5 Loss and Damage through an Urban Justice Lens

Demands for climate finance and reparations from high income countries have gained traction in international climate negotiations, particularly over the past five years and most notably through the loss and damage mechanism. The momentous decision reached at COP27 to create the L&D Fund is a milestone for climate justice,[67] with considerable potential to address the unfair global financial system, which is short-term oriented, crisis-prone, and further exacerbates inequalities.[68] Chapter 9 explores the L&D Fund in more detail.

Only 3–5 per cent of adaptation finance is designated explicitly for urban contexts, thereby creating major barriers to adaptation action.[69] Thus, it is critical for L&D funds to be localized, accessible and equitably distributed to ensure that the most vulnerable regions and communities receive the necessary support. The earlier discussion about ODA funds—which will almost certainly include L&D disbursements—is thus relevant here too.[70]

Loss and damage occurs when attempts to reduce emissions are not ambitious enough and when climate change adaptation efforts are inadequate or impossible to implement, thereby leading to irrevocable

Only 3–5 per cent of adaptation finance is designated explicitly for urban contexts, thereby creating major barriers to adaptation action

harm.[71] The interlinkages between urban and rural areas require central attention in all climate planning and actions: "Without attention to the rural and non-urban spaces, the city cannot become sustainable or just".[72] Cities are at the forefront of loss and damage and in urban settings marginalized communities with inadequate infrastructure,

housing insecurity, and limited access are disproportionately affected by climate-induced destruction.[73] Approaching loss and damage through an urban climate justice lens is thus vital for addressing these stark disparities and vulnerabilities faced by urban communities.

The formalization of climate justice elements through L&D is a major legacy of the Glasgow and Sharm-el-Sheikh COP summits.[74] Climate justice emphasizes that those least responsible for climate change often bear the brunt of its consequences. Loss and damage is fundamentally an issue of climate justice across countries and regions, generations, as well as within and between cities, where the most vulnerable are impacted the most.[75] The L&D Fund has considerable potential to assist urban communities experiencing climate-related impacts and losses; however, clearer guiding and implementation criteria are necessary to ensure equitable and just outcomes, particularly regarding "non-economic" loss and damage (such as the destruction of cultural heritage sites).[76] At the centre of these losses are issues of human rights, well-being and environmental sustainability.[77]

More effective and inclusive methodologies for assessing such often-intangible impacts are required.[78] Implementing dedicated assessments and appropriate financing mechanisms will help to rectify the major gaps in addressing non-economic loss and damage generated by both sudden and slow-onset events.[79] Several countries have recently begun to improve documentation of non-economic losses and develop risk retention instruments to address loss and damage used by slow-onset events. In 2019, for instance, the government of Fiji established a trust fund to finance the planned relocation for vulnerable communities in areas of the country that are highly exposed to extreme weather and slow-onset events.[80]

Displacement is an increasingly crucial urban dimension of loss and damage. One 2018 projection suggested that as many as 84 per cent of the world's fastest growing cities would be at "extreme" risk within the next 30 years, the majority of them in Africa and Asia, including a number of major commercial hubs such as Jakarta (Indonesia),

There is growing emphasis on migrants as critical "sustainability actors" supporting urban resilience building in destination locations

Manila (the Philippines), Lagos (Nigeria) and Addis Adaba (Ethiopia).[81] Furthermore, cities globally are experiencing higher levels of in-migration due to multiple interacting forces, including climate impacts, creating new challenges for urban planning and service delivery.[82]

These challenges notwithstanding, there is growing emphasis on migrants as critical "sustainability actors" supporting urban resilience building in destination locations such as Sweden, where rates of volunteering in environmental protection organizations are higher among international migrants than among those born in the country.[83] However, social exclusion exists in parallel with sustainability engagement as migrants and refugees globally are confronted with limited access to citizenship rights and housing tenure, public provisions in health and finance and participation in urban decision-making.[84] For improved understandings

of the urban dimensions of loss and damage, it is critical to adopt inclusive governance and rights-based approaches. This will also help ensure that the systemic injustices embedded in the development and climate finance landscape are addressed, with strong implications for international development policy.[85]

2.6 Societal Trends Across Scales

Several major societal and technological trends have intensified since the Paris Agreement, and these are often most pronounced and interconnected in urban settings. Key thematic areas include, but are not limited to: awareness and civil action (particularly linked to justice and equity); policy and governance; investors and business; energy and industry sectors; and information technology (particularly AI)

Several major societal and technological trends have intensified since the Paris Agreement, and these are often most pronounced and interconnected in urban settings

and innovation. As detailed throughout this report, there are some notable positive shifts underway under each thematic area, yet benefit distribution is highly unequal within and across cities globally. Much more acceleration and scaling are needed to support climate-resilient societies.[86] While it is beyond the scope of the chapter to explore each in depth, the following sections focus on several trends in more detail, highlighting their cross-cutting nature.

2.6.1 Accelerated electrification of society and its interlinkages

Energy is intricately connected to the ambitions of the Paris Agreement and the SDGs, particularly 7 and 11.[87] Figure 2.6 shows that access to electricity grew from 87 per cent of the global population in 2015 to 91 per cent in 2021. Nevertheless, as of 2021, 675 million people still lacked access to electricity, the majority (576 million) located in Sub-Saharan Africa.[88] SDG 7 ("Ensure access to affordable, reliable, sustainable and modern energy for all") has gained importance for local and regional governments since the start of the Russia-Ukraine conflict, with 23 per cent of local and regional governments in the global 2023 OECD-SDSN survey revealing it as a top priority, while another 57 per cent highlighted its increased relevance.[89] Directly linked to the Paris Agreement, transitions from fossil fuels to low- and zero-carbon sources of energy (44 per cent) and improving energy efficiency in the built environment (37 per cent) were identified as the two key priorities of local and regional governments to achieve SDG 7.[90] This picture is corroborated by the fact that under the Global Covenant of Mayors for Climate and Energy, over 10,000 cities globally have committed to reducing their emissions by a total of 24 Gigatons (Gt) by 2030.[91]

At the current rate of electrification, around 660 million people will still be without electricity by 2030, most of whom are in low-income countries, particularly in informal settlements

Despite steady progress, at the current rate of electrification, around 660 million people will still be without electricity by 2030, most of whom are in low-income countries, particularly in informal settlements.[92] In 2023 and for the first time, renewable energy—solar, wind, hydro and other sources—accounted for 30 per cent of global electricity generation (Figure 2.7), with solar and wind outpacing any other source of electricity.[93] Key clean electrification technologies are already making a significant contribution globally and expected to accelerate in coming decades. However, fundamental transformations linked to increased electrification remain highly unequal across and within countries, and particularly between formal and informal areas, and urban and rural settlements.[94]

Figure 2.6: Percentage of population with access to electricity, 2015 and 2021
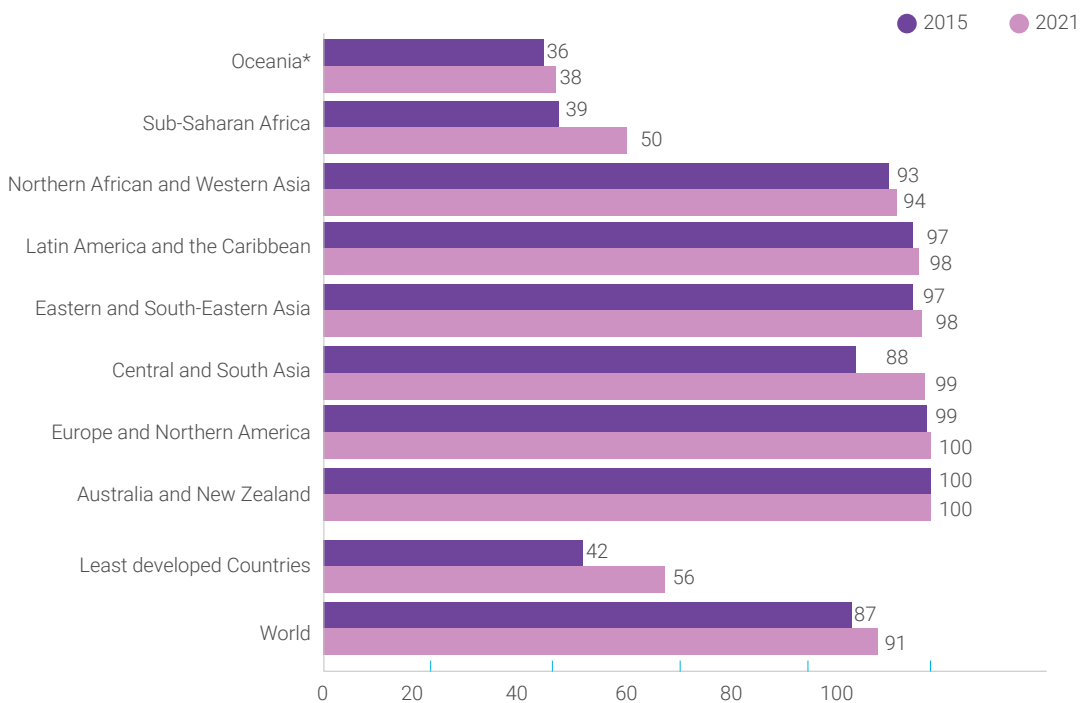
*Excluding Australia and New Zealand

Source: United Nations, 2023c.

In the meantime, coal and gas still dominate, producing 61 per cent of global electricity in 2023.[95] Cities as major centres of GHG emissions are beginning to shift from fossil fuel-based to sustainably-powered electricity sources under the global just transition towards low carbon energy production.[96] For example, Basel and Reykjavik have reported meeting their goal of 100 per cent renewable electricity, on the path

Cities as major centres of GHG emissions are beginning to shift from fossil fuel-based to sustainably-powered electricity sources under the global just transition towards low carbon energy production

towards 100 per cent renewable energy.[97] Many challenges remain, such as inadequate investments for upscaling; the resilience of sustainable power systems is affected by the seasonality of supply and demand and extreme weather events which create infrastructure vulnerabilities such as blackouts.[98]

While the decarbonization impacts of electrification are well documented at the regional and national levels, there is limited documented evidence on the impact of urban electrification on the sustainability of the current energy transition.[99] (Chapter 8 discusses innovations in renewable energy and technologies in more detail). Increased electrification represents and symbolizes a multifaceted societal transformation. From electric vehicles to smart infrastructure and renewable energy integration, this trend—which is increasing in cities across diverse regions, particularly mature economies such as the EU and US—is beginning to reshape residential areas, industries, transport and other sectors while contributing to global zero-carbon strategies to combat climate change.

Figure 2.7: Share of global electricity generation from renewable sources

Source: EMBER, 2004.
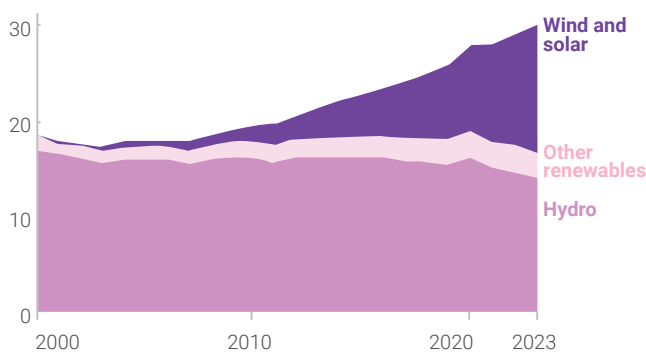
It was agreed at COP28 to double annual energy efficiency improvements by 2030, which will be central to delivering the full potential of economy-wide electrification. Rapid electrification of transport, heating and industry has significant potential to help reach global emission reduction targets and provide cost saving benefits through reduced energy waste. Electrification has been identified as a major driver of decarbonization across industries as the global power supply becomes cleaner: it is already playing a pivotal role in an array of smart cities where digital technologies are harnessed to enhance urban living and improve overall

Electrification has been identified as a major driver of decarbonization across industries as the global power supply becomes cleaner

efficiency. Balancing such technological advancements with inclusivity, sustainability and effective governance remains a key challenge for smart city development globally.[100] Diverse cities including Buenos Aires, Johannesburg, São Paulo, Singapore and Sihanoukville have adopted people-centred approaches to these promising new tools, ensuring their adoption is underpinned by principles of inclusion, human rights and ecological sustainability.[101]

An added co-benefit of electrification and urban greening is job creation. A recent study of 74 C40 member cities revealed that 16 million green jobs have already been created across diverse sectors.[102] Electric scooters, bikes and motorcycles are shifting mobility patterns in cities globally, largely driven by the need to reduce CO_2 emissions and advancements in technology. For example, the Iskandar Regional Development Authority in Malaysia is addressing transportation challenges through

The shift to electrified transportation could also deliver significant benefits in terms of climate change mitigation

the Smart Integrated Mobility Management System.[103] The integration and utilization of data collected through this portal will support evidence-based urban and transport planning. The shift to electrified transportation could also deliver significant benefits in terms of climate change mitigation. For example, there are an estimated 570 million two- and three-wheelers in Africa, Asia and Latin America, predominantly in urban areas. The majority still rely on internal combustion engines: converting them to electric power could lead to emission reductions of between 0.5 and 0.6 $GtCO_2e$ annually.[104]

2.6.2 Growing emphasis on Artificial Intelligence for supporting climate action

Advances in technology and innovation are evidently central to increased electrification and energy efficiency. Indeed, AI is becoming increasingly prominent in supporting diverse urban climate action, policies and societal trends set in motion by the Paris Agreement (Chapter 8). Globally, there is growing attention on the application of AI for climate action to support

AI is becoming increasingly prominent in supporting diverse urban climate action, policies and societal trends set in motion by the Paris Agreement

acceleration of the implementation of the Paris Agreement, particularly in cities.[105] AI has considerable potential to advance sustainable energy systems by fostering further development of clean technologies through a new phase of sci-tech innovation and transformation. In addition,

Advances in technology and innovation should support climate action © Shutterstock

AI-powered models can provide early warning systems to inform communities about disaster events. AI algorithms can even predict energy demand and optimize grid operations, enhancing the efficiency and reliability of renewable energy systems.[106]

Investment in the AI sector is growing rapidly in Asia, Europe and North America and set to be worth more than US$1.8 trillion billion globally by 2030.[107] In 2023, the UNFCCC launched the Technology Mechanism as a significant initiative on the role of AI for supporting climate action. This has received growing engagement from diverse stakeholders interested in exploring the role of AI in scaling up transformative climate action, particularly in cities.[108] The initiative focuses on least developed contexts and SIDS. AI is also playing a growing role in supporting urban planning: for instance, the city of Durban has applied an innovative software developed by UNITAC Hamburg that uses deep learning technology to accelerate the spatial recognition of informal settlements and structures based on aerial imagery. As shown in Chapter 8, the application and benefits of AI are skewed towards cities in middle-to-high-income countries.

Investment in the AI sector is growing rapidly in Asia, Europe and North America and set to be worth more than US$1.8 trillion billion globally by 2030

The potential risks of AI application also require more attention; indeed, AI-powered mis- and disinformation has been identified as possibly the world's greatest short-term threat, with major gaps in readiness across diverse contexts.[109] Since 2018, the Cities Coalition for Digital Rights, which includes some 50 cities and organizations, has shared best practices and coordinated collaborative initiatives on AI, machine learning and big data applications for sustainable development and climate action.[110] There is growing attention to diversity and inclusion considerations. Some cities, such as Barcelona, New York and Amsterdam, have developed AI ethical frameworks in response to concerns around the impacts of these technologies on human rights and gender equality.

The centrality of integration between modern AI technologies and citizen science to embed people-centred approaches to urban climate action and DRR is increasingly recognized.[111] For example, at COP28 the Technology Executive Committee collaborated with the UNFCCC Local Communities and Indigenous Peoples Platform to co-convene a multi-stakeholder dialogue and showcase Indigenous and community-led technologies.[112] Relatedly, the digital divide between and within cities and countries is a pressing challenge, since globally marginalized groups with limited internet access and digital skills are underrepresented in data and experience limited benefits from digital technology expansion.[113]

2.7 Harnessing Nature-Based Solutions to Accelerate National and Local Climate Action

The interconnectedness between the climate emergency and global loss of nature and biodiversity is clear, with their scale and complexities increasing rapidly.[114] The principle of attaching monetary values to natural assets and ecosystem services to promote sustainability and NbS has become well established and widely applied, even though the practice has at times been criticized as simplistic, narrowly formulated and even unethical, particularly if used to provide a "business case" for the destruction of local environmental assets. Precise methodologies vary and the extent to which different stakeholders, and especially Indigenous or traditional knowledge holders, are involved in determining such values can be important in gaining wide acceptance in diverse urban settings. NbS are crucial for cities for enhancing climate resilience, improving air and water quality, and promoting overall well-being.

Nevertheless, the data analyzed for the 2023 analysis by UN-Habitat, UNDP and SDU of the urban content of NDCs discussed earlier in this chapter revealed that only 15 of the 129 NDCs with high or moderate urban content (Clusters A and B) mentioned NbS or green-and-blue infrastructure explicitly. Such mentions were brief and lacking in specificity so the significance is hard to assess. However, based on the other relevant evidence reported below, the NDC data are likely to underrepresent the actual importance of NbS within national and urban climate change strategies to achieve net zero.

Many cities now express their urban greening activities in terms of ecosystem services or NbS, whether in relation to mitigation (such as the provision of shade to alleviate the urban heat island), public health (increased access to physical activity and mental well-being) and/or biodiversity enhancement (through habitat restoration and the like). More recent conceptualizations include combining blue, green and brown components into an integrated "soft" infrastructural approach

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addressing land-based and water-based elements to maximize co-benefits, including active leisure locales and wildlife.

These interventions are being adopted and expanded by cities and regions globally. For instance, Durban's Metropolitan Open Space System covers 33 per cent of the municipal land area and is central to the city's climate and resilience strategies.[115] Examples exist across developing countries, ranging from networks of blue-green infrastructure to reforestation, pocket parks, street trees and urban/peri-urban agriculture. These schemes vary in ambition, scale and complexity—hence the nature of appropriate governance—but key ingredients include cost-effectiveness, scalability and rapid demonstration of tangible results in tackling climate change, with additional co-benefits for poor and marginalized communities.[116]

City networks and other transnational actors have been active proponents of such actions, providing guidelines and examples of good practice and peer learning opportunities.[117] For instance, since its launch in 2021, more than 40 member cities have engaged in the C40 Urban Nature Accelerator: signatories pledge by 2030 to "increase the overall amount of nature to reach 30-40 per cent of the total built-up city surface area" and/or to "ensure 70 per cent of the city population has access to a green or blue space within 15-minutes".[118] The importance of such initiatives is more relevant than ever, given that urban green spaces as a share of total area and per capita have reduced in the past three decades, with severe consequences for carbon capture, pollution, public health and well-being (see Chapter 5).

Such initiatives as the Urban Nature Accelerator are consistent with the Global Framework for Biodiversity adopted at COP15 of the Convention on Biological Diversity,[119] the work of the Intergovernmental Panel on Biodiversity and Ecosystem Services, and the UN-Habitat *White Paper on Cities and Nature*.[120] The latter sets out key principles, actions and tools for maximizing the role and benefits of urban nature, while minimizing existing or future conflicts, including land-sparing measures to prevent future habitat loss. Other innovative examples include the ICLEI Urban Natural Assets for Africa programme, previously discussed in the *World Cities Report 2022*,[121] which established a network of participating cities to share lessons. The maintenance of positive dynamics beyond project funding is a key challenge and further reiterates the importance of ongoing city-to-city co-operation facilitated by such city networks. Central to these have been multipurpose NbS projects to make individual neighbourhoods more liveable.

Towns and cities in arid and semi-arid regions face particular challenges because of the more extreme conditions and water shortages that make many NbS and ecosystem services impracticable. In recent summers, cities in the Gulf region have experienced record high temperatures, with Kuwait perhaps the most extreme at over 50°C for periods. Under such conditions, planning to establish "15-minute neighbourhoods" (a compact, mixed use urban design approach covered in Chapter 5) would be problematic as this amount of time by bicycle or on foot would be impossible for most people. Similarly, in the Southwest of the US, several consecutive years of drought have depleted the Colorado River and Lake Mead, threatening both water and electricity supplies to the region: the scarcity has driven a fierce debate on the competing claims of urban and rural water consumers, underlining the sustainability challenge of rapid urban development in such an arid region.[122]

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Implementation of NbS tends to be most successful when undertaken in people-centred ways that are culturally appropriate, socially inclusive and environmentally sustainable—including climate mitigation and/or

adaptation elements. The evidence base on community experiences of NbS design and implementation has grown significantly since the Paris Agreement, including from low-income and informal settlements.[123] Recent NbS "niche" projects across three informal settlements in Nairobi

> **Implementation of NbS tends to be most successful when undertaken in people-centred ways that are culturally appropriate, socially inclusive and environmentally sustainable**

and Dar es Salaam revealed that residents' perceptions and valuation of urban nature clearly shifted through co-design and co-implementation, thereby fostering community ownership and sustainability of NbS effectiveness.[124] Older residents, who are often repositories of Indigenous and traditional knowledge about NbS practices, can perform valuable services in guiding locally appropriate interventions such as shoreline mangrove restoration. Optimization of the effectiveness and impact of NbS also requires an integrated city- or metropolis-wide approach, with ecological elements integrated with traditional engineered or "grey" infrastructure where appropriate.[125]

2.8 Private Sector Involvement in Urban Climate Interventions Since the Paris Agreement

The Paris Agreement calls for greater involvement of the private sector in climate action. The private sector has played an increasingly prominent role at successive COPs since 2015, particularly since COP26 when the First Movers Coalition (FMC) was launched, bringing together

> **The private sector has played an increasingly prominent role at successive COPs since 2015, particularly since COP26**

a collation of companies, corporations and other actors engaged in the development and promotion of low-carbon technologies.[126] The private sector is a critical source of expertise, innovation and resources under multi-level governance approaches for supporting urban climate interventions such as climate-smart infrastructure and insurance products.[127] The significant appetite for engagement from some parts of the private sector is demonstrated by the thousands of companies and investors who have already registered commitments on the UNFCCC Global Climate Action portal.[128] Private sector climate action in cities takes various forms, from investing in renewable energy and energy-efficient buildings to supporting sustainable transportation and waste management initiatives.

> **The private sector is a critical source of expertise, innovation and resources under multi-level governance approaches for supporting urban climate interventions**

Despite these signs of progress, however, the pace and scale of action remains inadequate.[129] As evidenced in the well-established body of literature[130], private sector climate interventions have been largely mitigation-orientated to date. As the most recent IPCC report attests, evidence of private sector involvement in urban adaptation is weak: while the literature on private sector-led adaptation action at national scales is more developed,[131] there are major gaps in investment in adaptation at the local level, particularly in rapidly urbanizing countries.[132] One study of 402 cities worldwide found that adaptation efforts were focused principally on the public sector, particularly municipal premises, operations and housing stock, and considerably less on facilitating adaptation or behaviour change among private sector and civil society actors.[133]

Nevertheless, over the past decade there has been growing, albeit fragmented evidence of private sector commitment and action on urban adaptation and mitigation. Since 2015, public-private collaborations for climate action have played an increasing role in cities and take diverse forms.[134] These are emerging through formal bodies and public-private partnerships such as the innovative cycle network in Bogotá (Colombia)—a shared bicycle system in partnership with the company

> **Over the past decade there has been growing, albeit fragmented evidence of private sector commitment and action on urban adaptation and mitigation**

Tembici, with an innovative model utilizing public space.[135] A similar model is evident in Rwanda in Kigali's Imbuga City Walk—a 520-metre corridor comprising the city's largest car-free zone, developed by the local government and managed by a private company.[136] Other successful alliances include the Energy, Water & Waste Forum in Cape Town (South Africa)[137] or the Indian city of Pune's Electric Vehicle Cell, where collaboration between the city government, businesses and other stakeholders facilitates the achievement of climate goals.[138]

In support of adaptation, the municipal government of Rotterdam, the Netherlands, has increasingly focused on eco-innovation and partnerships with the private sector. One initiative sought to increase flooding protection through the construction of floating housings, with multiple co-benefits for diverse stakeholders including construction industries, technology firms and home owners.[139] Cities collaborating with the private sector on essential sustainable urban development projects have in some cases achieved multiple co-benefits while securing financing to support their climate goals. For example, between 2019 and 2023, Mexico City invested US$57 million in infrastructure into the Vallejo-I industrial area to catalyse mixed land use, expanded green spaces, increased densities and affordable housing.[140] The development helped promote business investment and relocation to the area, with over US$800 million in private investment from 300 small and large companies raised by the time the project was completed.[141]

However, private sector engagement in urban climate action has significant justice implications that should not be overlooked. The conflicting interests and potential risks of maladaptation that can arise from private sector-led climate action need to be addressed. For example, the latest IPCC report highlights rapidly growing evidence, particularly in North American cities such as Miami, Philadelphia and New Orleans, of real estate responses to flooding creating climate gentrification by displacing low-income residents and entrenching injustices.[142] At the same time, unregulated private development in flood-prone coastal cities in India has exacerbated flooding for some low-income communities.[143] Private sector climate investments and interventions need to form part of co-operative governance arrangements and rooted in locally-led considerations such as culture and accessibility to ensure inclusion of marginalized communities, persons with disabilities, women and children. Supportive enabling environments and partnership arrangements are key to facilitating this.[144]

2.9 Participatory Knowledge Co-Production to Advance the 2030 Agenda

The challenges outlined in the 2030 Agenda are complex and interconnected, requiring transdisciplinary approaches and collective action. By bringing together stakeholders from various sectors—governments, academia, civil society and the private sector—knowledge co-production processes enable the synthesis of scientific evidence, local knowledge, and practical experience. Emphasis on co-production for addressing climate change and related policy development in urban locales has become a prominent feature globally.

Co-production encompasses multiple forms of "deep" participatory multi-stakeholder collaboration that cut across sectors, disciplines and cultures to acknowledge the complexity, uncertainty and contested nature of urban development. These processes differ from conventional planning and implementation practice in two fundamental respects.

Emphasis on co-production for addressing climate change and related policy development in urban locales has become a prominent feature globally

First, a guiding principle throughout is that *all* stakeholders have relevant knowledge and experience of local conditions to contribute equitably to new urban planning and development interventions. Second, co-production should enable the eventual intervention to be far more locally appropriate and acceptable than conventional "expert-led" projects developed with minimal input from affected stakeholders. There is a growing body of supportive experience and evidence from urban areas of varying sizes and complexity in different world regions.[145]

The IPCC strongly emphasizes that since the Paris Agreement, civil society and private actors have emerged as central knowledge holders and drivers of experimentation, increasingly shaping and changing public policy in the process.[146] Participatory approaches to climate action help to ensure that the needs of all residents, particularly marginalized groups disproportionately exposed to climate change impacts, are properly considered. Locally-led urban adaptation and DRR approaches

Since the Paris Agreement, civil society and private actors have emerged as central knowledge holders and drivers of experimentation, increasingly shaping and changing public policy in the process

have proliferated globally, often supported by NGOs and city networks. One example is the DARAJA (Developing Risk Awareness Through Joint Action) community-led early warning initiative: having been piloted in Nairobi (Kenya) and Dar es Salaam (Tanzania) between 2018 and 2020, the programme is being scaled up across East Africa and linked to the UNFCCC's Race to Resilience Campaign.[147]

Such approaches are increasingly based on hybrid coalitions consisting of multiple state and non-state actors, with intermediaries or "bridge builders" playing key facilitation and other roles.[148] There is growing emphasis on mobilizing local communities in supporting disaggregated and inclusive data generation and monitoring. For instance, informal community profiling supported by Slum Dwellers International's network and community organizations in Freetown (Senegal) and Dar es Salaam (Tanzania) helps strengthen capacity building and create increased visibility to city planners to ensure more informed, inclusive strategies.[149] The Resilient Urban Sierra Leone Project is a similarly innovative and participatory initiative supporting Freetown in the restoration of its canopy cover through community-based reforestation to address landslide risk and rising urban heat stress.[150] The project uses innovative digital tools such as the mobile based TreeTracker app, applied by communities as a monitoring system that incentivizes and tracks the growth of the vegetation planted through digital cash micropayments to participants who care for the new plants.[151]

2.9.1 The role of activist movements in urban action

Since the Paris Agreement, there has been growing emphasis on equality and inclusion in urban climate action, often spurred by activists, youth, Indigenous Peoples, academics and unions.[152] The rise of global climate

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justice solidarity movements such as Fridays for Future and Extinction Rebellion, often centred in cities, has begun to influence policy debates by highlighting the urgency for transformative climate policies that address systemic injustices.[153] Such movements have also catalyzed an increase in localized youth-led climate actions and alliances across diverse regions, with their actions often concentrated in cities. Consequently, there is mounting pressure on local urban and subnational governments to be more accountable and increase the participation of historically marginalized groups in decision-making processes through more people-centred and equitable climate actions. In Canada, the National Adaptation Platform recognizes the importance of Indigenous knowledge in addressing climate impacts on Indigenous communities and ecosystems, with implications for urban governments. Similarly, in New Zealand, the Climate Change Commission has emphasized the need to engage with Māori communities and incorporate their perspectives into climate policy development. Furthermore, Nemonte Nenquimo, an Indigenous leader of the Waorani Nation, set a legal precedent for Indigenous rights in Ecuador by successfully suing the government in 2019 to protect 500,000 acres of Waorani ancestral territory in the Amazon rainforest from oil extraction.[154]

There is mounting pressure on local urban and subnational governments to be more accountable and increase the participation of historically marginalized groups in decision-making processes

Attention to gender and intersectionality in climate policies and actions across scales has increased significantly over the past decade. Since the Paris Agreement, cities globally have increasingly embedded gender-responsive approaches into DRR and climate resilience planning by applying gender-disaggregated data and analysis, setting clear goals and actions to improve gender equality and monitoring progress in gender-responsive budgeting and implementation of plans.[155] These gender-sensitive and equity-based adaptation approaches reduce vulnerability for marginalized groups across multiple sectors, including livelihoods, water, health and food systems across diverse countries in urban and rural settings. There are significant mentions of gender in 90 per cent of the most recent NDCs and 94 per cent of National Adaptation Plans of Action.[156] However, it remains to be seen to what extent these stated ambitions are realized on the ground. Indeed, studies across diverse contexts in East Africa, Latin America, the EU and elsewhere show that,

Since the Paris Agreement, cities globally have increasingly embedded gender-responsive approaches into DRR and climate resilience planning

despite explicit gender considerations within climate policies and urban plans, implementation remains modest. This is attributed to multiple interacting factors such as limited gender-sensitized policy staff, lack of political will and inadequate finance allocations.[157]

2.10 Concluding Remarks and Lessons for Policy

This chapter has presented a reinvigorated call to urgent and transformative action across all fronts in pursuit of the commitments under the Paris Agreement. Climate change has emerged as a critical factor shaping international development policy, with widespread urban implications. Despite some progress, as evidenced throughout this report, the world is not on track to remain within the 1.5°C ceiling for global warming set by the Paris Agreement. Indeed, the latest estimates

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suggest that we may already have reached the 1.5°C threshold.[158] Initial progress on many of SDGs was set back and, in many cases, reversed by the combined effect of the COVID-19 pandemic and the impact of food and energy price increases triggered by the Russian-Ukraine conflict on livelihoods, economic activity and poverty levels.

The reduction in emissions witnessed during the COVID-19-induced lockdowns proved very short-lived, but the other effects are taking far longer to recover from, not least because of the diversion of local government funds into emergency coping efforts.[159] Whether the world might have achieved the 1.5°C or even 2°C targets without these crises remains a moot point, and all have considerable implications for the Paris Agreement. GHG emissions are rising again and driven by a wide range of factors, which include the lifting of mobility restrictions, the return to normalcy, the rebound of the global economy as well as unsustainable patterns of production and consumption, often in urban areas.

Clearly, urban issues have risen to prominence in international policy and agendas in the past decade, with considerable implications for climate action and development. However, more supportive enabling environments and enhanced assistance are urgently required, particularly in small- and medium-sized cities and informal settlements in low-income countries, in order to ensure achievement of the Paris Agreement and other global agreements. Key areas include effective local governance, data and monitoring and accessible finance.

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Policy related implications include, but are not limited to:

- Historically, COP negotiations and outcomes have not adequately addressed cities and other subnational entities, yet this has begun to shift. City networks play a significant role in ensuring that cities and subnational governments are recognized in international negotiations and agreements. Localization of global agendas has become more mainstream in sustainable development and climate approaches as cities are increasingly acknowledged as key arenas for effective climate action. The proliferation of local and subnational climate advocacy, action and policies is also redefining global climate politics across scales.

- The journey towards low-carbon futures is a shared responsibility, requiring collaborative policy and interventions across all scales. While countries are showing progress in their recent pledges, as evidenced by enhanced, higher-quality NDCs, the aggregate effect on global emissions remains disappointing and requires urgent action across all quarters, including increased mainstreaming of gender, youth, Indigenous knowledge and other considerations. Much more needs to be known about the role of urban governments in shaping and supporting the achievement of NDCs and linked policy developments.

- There are major gaps in urban climate finance from both the public and private sectors. Mobilization of further finance and restructuring of the existing financial architecture is urgently required at all levels to ensure that adaptation, mitigation and L&D receive new and additional funding. Furthermore, it is important that local governments and communities have direct and equitable access to allocated funds.

- Key societal trends such as electrification and AI have increased in scale and application in cities over the past decade. While resulting in many positive adaptation and mitigation impacts, their impacts are distributed highly unevenly across and within cities globally, with informal settlements in particular largely excluded from these benefits. Similarly, interventions to address climate change have inequitable implications, with potential for negative consequences for low-income and other marginalized groups: to prevent this, it is essential they are developed in a co-produced manner, with explicit focus on people-centred and inclusive approaches.

Endnotes

1   Dodman et al., 2022.
2   UN-Habitat 2022a, p.310; Climate Governance Commission 2023, p.55.
3   Dodman et al., 2022; Pauw & Klein, 2020; UNEP, 2021a.
4   UNDP & University of Oxford, 2024, p.13.
5   EU, 2024.
6   The World Humanitarian Summit is included for its significance in generating over 3,500 commitments to action and emphasizing the role of non-state actors.
7   UN-Habitat, 2023b.
8   Independent Group of Experts, 2023; United Nations, 2023c; UN-Habitat, 2023b.
9   Ionescu et al., 2024.
10 Sachs et al., 2022, p.20; Simon, 2024, pp.74-77, 128; United Nations, 2023c.
11 Boulle, 2023; Pauw & Klein, 2020; Weikmans et al., 2019; Winkler et al., 2017.
12 Altieri et al., 2016; Antwi-agyei et al., 2018.
13 Atteridge et al., 2021; Boulle, 2023; Mantlana et al., 2021.
14 Bäckstrand et al., 2017; Hale, 2016; Hsu et al., 2019.
15 UNDP et al., 2024, p.8.
16 UNDP et al., 2024, pp.8, 22.
17 UNDP/UN-Habitat/SDU 2024.
18 UNFCCC, 2022b.
19 OECD & SDSN, 2024.
20 OECD/SDSN, 2024, p.9.
21 Climate Emergency Declarations, 2024.
22 Bulkeley et al., 2023.
23 UN-Habitat, 2023b, p.58.
24 UN-Habitat, 2023b, pp.58-59.
25 UN-Habitat, 2023b, p.60.
26 UN-Habitat, 2023b, p.60.
27 While variously defined, a widely accepted definition is: "serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts'" (UNDRR, 2016).
28 Simon, 2024, pp.37-38; Fraser et al., 2017.
29 Simon, 2024.
30 WHO, 2022.
31 Simon, 2024, p.39.
32 Simon, 2024.
33 UN-Habitat, 2023b, pp.68-73.
34 Bailey et al., 2023; Guo et al., 2024.
35 UN-Habitat, 2023b, pp.88-89.
36 UNDRR, n.d.a.
37 As such, did not form part of the original SDG monitoring and reporting system established by the UN.

38 Simon, 2024, pp.92-97.
39 UN-Habitat & UCLG, 2023.
40 UN-Habitat & UCLG, 2023.
41 UN-Habitat & UCLG, 2023; Ortiz-Moya and Reggiani, 2023.
42 NbS solutions and critiques are explored in multiple case studies throughout the Report.
43 Berrang-Ford et al., 2021.
44 UN-Habitat & UCLG, 2023.
45 UN-Habitat, 2024a.
46 Roberts, 2021.
47 United Nations, 2022e.
48 Ortiz-Moya and Reggiani, 2023.
49 The annual COP is the highest decision-making forum for UNFCCC implementation. Each year, UN Regional Groups appoint a national government as the COP Presidency, nominate the High-Level Climate Action Champion, and identify key themes for action and negotiation based on their national and regional priorities.
50 UN Environment, 2019; Brondizio et al., 2019; UNDRR, 2019; IPCC, 2019; Hoegh-Guldberg et al., 2018.
51 Race to Resilience, 2023.
52 ICLEI, 2023. The LGMA represents cities and regions in the climate negotiation process. ICLEI is the focal point for the LGMA which works on behalf of the Global Taskforce of Local and Regional Governments; a joint global policy advocacy initiative of the major international networks of local governments, working on climate-related issues
53 SURGe, 2023. It was also anchored in a resolution on "Enhancing Interlinkages between Urbanization and Climate Change" at the second UN-Habitat Assembly. Work packages for operationalization will be presented in early 2024.
54 UN-Habitat, 2022b, p.310; Climate Governance Commission, 2023.
55 Mitlin et al., 2018.
56 Mitlin et al., 2018.
57 UN-Habitat, 2022b.
58 Herrera, 2024.
59 OECD, 2023c.
60 OECD, 2023c.
61 Yap et al., 2022.
62 Yap et al., 2022.
63 The clause states that developed countries "shall provide new and additional resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under the convention" (UNFCCC Article 4 Commitments, p.3).
64 OECD, 2024b.
65 CARE, 2023.
66 OECD, 2024b.

67 Wyns, 2023.
68 United Nations, 2023c.
69 Richmond et al., 2021, p.17.
70 Boyd et al., 2021. Clear guidelines and transparent mechanisms are necessary to distinguish between urban adaptation and loss and damage financing, to prevent unintended consequences of depleting funds meant for proactive measures to cope with the irreversible loss and damage resulting from climate change impacts.
71 Bhandari et al., 2022; Serdeczny et al., 2024.
72 Pellow, 2022, p.16.
73 C40, 2023c.
74 Adger, 2023, p.142.
75 C40, 2023c.
76 Vousdoukas et al., 2022. Under the Loss and Damage Fund, countries responsible for high greenhouse gas emissions will compensate vulnerable countries suffering from these impacts, but details of how the fund will operate are still being finalized.
77 Roberts and Pelling, 2019.
78 Dodman et al., 2022.
79 Mechler and Deubelli, 2021.
80 United Nations, 2019b.
81 Irwin-Hunt, 2018.
82 Armiero et al., 2023.
83 Fry et al., 2024.
84 Chu and Michael, 2019; Fry et al., 2024; Kotsila, 2023; Romero-Lankao & Norton, 2018.
85 C40, 2023c.
86 New Climate Initiative, 2023.
87 Mensah, 2022.
88 IRENA, 2023.
89 OECD, 2024b, p.10.
90 OECD, 2024b.
91 United Nations, 2022e.
92 UN Stats, 2023.
93 EMBER, 2024.
94 REN21, 2021.
95 EMBER, 2024.
96 Romero-Lankao et al., 2021.
97 C40 Cities, 2021a.
98 Romero-Lankao et al., 2021.
99 REN21, 2021; Romero-Lankao et al., 2021.
100 Smart City Hub, 2022.
101 United Nations, 2022e.
102 C40, 2024a.
103 United Nations, 2020.
104 UNEP, 2023e.
105 Chishti et al., 2024.
106 World Eeconomic Forum, 2024; UNFCCC, 2024b.
107 Chishti et al., 2024.
108 UNFCCC, 2024b.
109 UNDP, 2024a.
110 United Nations, 2022e.
111 UNESCO, 2022.
112 UNFCCC, 2024b.

113 United Nations, 2022e.
114 Bulkeley et al., 2023; Dodman et al., 2022.
115 eThekwini Municipality, 2013, p.12; Roberts et al., 2020.
116 UN-Habitat, 2022b; Simon et al., 2021; Anujan et al., 2024.
117 Rochell et al., 2024.
118 C40, 2023d.
119 Convention on Biodiversity, 2022.
120 UN-Habitat, 2022e.
121 UN-Habitat 2022a, p.315.
122 Partlow, 2023.
123 Diep et al., 2023. Furthermore, Bina et al. 2024 demonstrate the potential for inclusive transdisciplinary visioning of desired urban futures around NbS.
124 Diep et al., 2023.
125 Frantzeskaki & Bush, 2021; McPhearson et al., 2022; Collier et al., 2023.
126 World Economic Forum, 2024b.
127 UN-Habitat, 2022b.
128 UNFCCC, 2024b.
129 WRI, 2021; UNEP, 2023a.
130 Averchenkova et al., 2016.
131 Crick et al., 2018a; Crick et al., 2018b.
132 Dodman et al., 2022.
133 Klein et al., 2018.
134 Watts & Deacon, 2024.
135 Urban Shift, 2023b.
136 Urban Shift, 2023c.
137 Urban Shift, 2023d.
138 Urban Shift, 2023e; Watts and Deacon, 2024.
139 Dodman et al., 2022; Huang-Lachmann and Lovett, 2016.
140 Urban Shift, 2023f; C40 Cities, 2022b.
141 Urban Shift, 2023f.
142 Dodman et al., 2022; Shokry et al., 2020.
143 Weinstein et al., 2019.
144 Bailey et al., 2024.
145 Hemström et al., 2021.
146 Dodman et al., 2022.
147 Resurgence, 2023.
148 Dodman et al., 2022.
149 UN-Habitat, 2020; Dobson, 2017; Allen et al., 2017.
150 Global Environment Facility, 2023.
151 Global Environment Facility, 2023.
152 Sultana, 2022.
153 New Climate Institute, 2023.
154 Wiebe, 2021.
155 Alber, 2024; UN Women & UNEP, 2020; UNEP, 2021a.
156 UNFCCC, 2022b.
157 Allwood, 2020; Ampaire et al., 2020; Howland et al., 2021.
158 Climate Governance Commission, 2023.
159 Independent Group of Experts, 2023; UN-Habitat, 2023b; Simon, 2024.

Tanner Springs Park, a
remediated wetland and
naturalized public space, in
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