
Unrealised “Build Back Better” Potential in the Era of Polycrisis: Lessons from COVID-19 for City Climate and Energy Transitions

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ABSTRACT

Mitigating climate change in cities remains a central global policy priority, given that the majority of emissions stem from urban production and consumption.¹ Prior to COVID-19, thousands of city governments had adopted ambitious climate action plans, including net-zero and renewable energy commitments. This study examines how COVID-19 and associated recovery packages affected city-level plans and actions. Drawing on literature on net zero, renewable energy, resilience, and COVID-19 recovery commitments and investments, as well as an original survey of 30 cities across the Global North and South—Argentina, Indonesia, Kenya, Mexico, Mozambique, the Philippines, South Africa, Sweden, Turkey, the United Kingdom, and the United States—and interviews with leaders from five megacities (Jakarta, Johannesburg, London, Mexico City, and New York), the analysis provides a comparative assessment of impacts and responses. The results indicate that city climate ambition and progress varied significantly by region, as did the effects of COVID-19 and recovery efforts. Many cities experienced delays as resources were redirected to immediate crisis response, while others benefited from new national green recovery policy frameworks and financing streams. Nearly three years after the World Health Organisation (WHO) marked the official end of the pandemic as a global health emergency in May 2023, COVID-19 has not fundamentally transformed cities in either the adverse or transformative ways initially anticipated. This paper identifies a set of recommendations to help cities leverage lessons from the pandemic to advance climate mitigation in the context of increasingly frequent and severe shocks.



¹ Intergovernmental Panel on Climate Change. *Climate Change 2022: Mitigation of Climate Change*. Cambridge

University Press, 2022.

I. Introduction

Mitigating climate change and energy consumption in urban areas has become one of the most important climate policy aims worldwide due to the lion's share of emissions stemming from city production and consumption.² Before the onset of COVID-19, thousands of cities around the world set ambitious net zero targets, 1.5°C alignment, renewable energy transition and other climate action commitments. This paper sets out the following research questions:

- (1) How did COVID-19 affect renewable energy adoption and fossil fuel energy reduction plans and delivery in global cities?
- (2) What can be learned from this experience to increase resilience of city-level climate goals & action to external shocks?
- (3) What more can be gained from the COVID-19 experience to better understand city-level scope of action in the era of the “polycrisis”?

Through a mixed-methods analysis, this paper examines how COVID-19 affected cities' climate plans and actions, comparing observed outcomes with early-pandemic expectations that the crisis might fundamentally reshape urban systems and energy use, and that “green recovery” strategies would accelerate climate progress

in cities.³ In this context, “green recovery” is understood as “strategies and measures that combat the social, economic and environmental impacts of the global COVID-19 pandemic [and facilitate] long-term transformative change towards sustainability, biodiversity protection, resilience and climate neutrality”,⁴ while “Build Back Better” refers to “a three-pronged approach to reconstruction and recovery that includes indicators for disaster risk reduction (DRR), community recovery, and effective implementation”.⁵ The analysis further considers how resilience-oriented approaches and successes may offer insight into sustaining progress in renewable energy investment and broader decarbonisation efforts, even in the context of an ongoing “polycrisis”.⁶ In parallel, we consider how resilience-building approaches and literature might provide clues to how renewable energy investments and other decarbonisation interventions might be maintained, even in the context of polycrises.

At the outset of COVID-19, cities were hit first and hardest, leading to health, economic disasters and temporary transformations of daily urban life and essential services.⁷ Cities experienced mass shut-downs of transport, starkly empty streets and buildings, and, in some cases, a population exodus to peri-urban and rural settings.⁸ During this period, a slew of expectations emerged about the fate of

² Aboagye, Prince Dacosta, and Ayyoob Sharifi. “Post-Fifth Assessment Report Urban Climate Planning: Lessons from 278 Urban Climate Action Plans Released from 2015 to 2022.” *Urban Climate*, vol. 49, 2023, p. 101550.

³ Dantas, G., et al. “The Impact of COVID-19 Partial Lockdown on the Air Quality of the City of Rio de Janeiro, Brazil.” *Science of the Total Environment*, vol. 729, 2020, p. 139085.; Baldasano, José M. “COVID-19 Lockdown Effects on Air Quality by NO₂ in the Cities of Barcelona and Madrid (Spain).” *Science of the Total Environment*, vol. 741, 2020, p. 140353.; Zhang, J., Y. Hayashi, and L. D. Frank. “COVID-19 and Transport: Findings from a Worldwide Expert Survey.” *Transport Policy*, vol. 103, 2021, pp. 68–85.

⁴ Hartmann, Lisa, et al. “A Conceptual Framework for a Post-COVID-19 Green Recovery of the Blue Economy.” *Marine Policy*, vol. 171, 2025, p. 106446.

⁵ Fernandez, Glenn, and Iftekhar Ahmed. “Build Back Better Approach to Disaster Recovery: Research Trends

since 2006.” *Progress in Disaster Science*, vol. 1, 2019, p. 100003.

⁶ Sadler, A., et al. “The Impact of COVID-19 Fiscal Spending on Climate Change Adaptation and Resilience.” *Nature Sustainability*, vol. 7, 2024, pp. 270–281 cited in Organisation for Economic Co-operation and Development (OECD). “Key findings from the update of the OECD Green Recovery Database”, OECD Policy Responses to Coronavirus (COVID-19), 2021.

⁷ Mouratidis, Kostas. “How COVID-19 Reshaped Quality of Life in Cities: A Synthesis and Implications for Urban Planning.” *Land Use Policy*, vol. 111, 2021, p. 105772.

⁸ Nathan, Max, and Henry Overman. “Will Coronavirus Cause a Big City Exodus?” *Environment and Planning B: Urban Analytics and City Science*, vol. 47, no. 9, 2020, pp. 1537–1542; González-Leonardo, Miguel, et al. “Rural Revival? The Rise in Internal Migration to Rural Areas during the COVID-19 Pandemic: Who Moved and Where?” *Journal of Rural Studies*, vol. 96, 2022, pp. 332–342.

cities post-pandemic, ranging from the prediction that COVID-19 would lead to a permanent exodus from cities,⁹ to newfound opposition to densification and compact living, to the prediction that COVID-19 would fundamentally transform cities in a positive manner by catalysing green recovery. For example, Reckien argued that the climate and pandemic emergencies could be redressed simultaneously by reimagining cities through “de-centralized, multi-centered, green, and networked urban areas”,¹⁰ which focused on lower emission, more inclusive, and healthier cities. Yet beyond such typically urban discussions of density and desertion, studies at the time may have also failed to predict how COVID-19’s social upheaval would also lead to the jeopardising of city decarbonisation efforts. This also brings the broader question of how the shift of policy agendas into polycrisis mode during COVID-19 has derailed other policy agendas. UNEP’s 2024 foresight report highlights how “governments and international organisations [should] adopt a broad, whole-system perspective, which seeks to understand the interactions between crises and the architectures that link systems globally. When those connections are understood, it becomes possible to design interventions that reduce fragility and create a foundation for genuinely sustainable development”.¹¹ This paper considers COVID-19’s impact on city decarbonisation as a local-global systems study from which much can be learned on how the decarbonisation agenda might be reaffirmed.

As global crises continue to emerge in various geographical, sectoral, and temporal contexts,

the term ‘polycrisis’ has been increasingly used in political science, as exemplified by its inclusion in the 2023 Global Risks Report by the World Economic Forum (WEF): “present and future risks can also interact with each other to form a ‘polycrisis’—a cluster of related global risks with compounding effects, such that the overall impact exceeds the sum of each part”.¹² Scholarship on great social and political change progress through green recovery or build back better approaches to COVID-19¹³ can appear overly optimistic. However, the scale of actions such as the UN Research Roadmap for the COVID-19 Recovery¹⁴ and the UN Framework for the Immediate Socio-Economic Response to COVID-19¹⁵ suggested that systematic change could be possible. While crises such as the war in Ukraine and the Middle East complicate our ability to retrospectively assess the impact of COVID-19, the connection between the ways in which public authorities intervene in health crises, much like the climate crisis, creates a compelling context for analysis. In addition, the compounding of global security and economic crises in 2026 indicates the need for further reflection on how the COVID-19 pandemic relates to connected sets of crises (or ‘polycrises’) and how looking at resilience and adaptation literature provides clues for the future-proofing efforts to decarbonise cities and drive urban level climate action.¹⁶ The “causal entanglement of systems offers the possibility to move from polycrisis to multiple equilibria”¹⁷ and highlights how resilience and other types of systems thinking could begin to outline the necessary pathways for consolidating decarbonisation approaches

⁹ Rajan, S. I., and R. B. Bhagat. “Internal Migration and the COVID-19 Pandemic in India.” *Migration and Pandemics*, vol. 164, 2022, p. 227.; González-Leonardo, Miguel, et al. (n 8).

¹⁰ Reckien, Diana. “What Can Local Climate Planning Learn from COVID-19? Transform the City—It Saves the Climate and Lowers the Risk of Pandemics.” *Planning Theory & Practice*, vol. 22, no. 4, 2021, p. 653.

¹¹ United Nations Environment Programme. *A Global Foresight Report on Planetary Health and Human Wellbeing*. 2024, p.13

¹² World Economic Forum. “Resource Rivalries: Four Emerging Futures.” *Global Risks Report 2023*, p. 57.

¹³ Pelling, Mark, et al. “Building Back Better from COVID-

19: Knowledge, Emergence and Social Contracts.” *Progress in Human Geography*, vol. 46, no. 1, 2022, pp. 121–138; Organisation for Economic Co-operation and Development (n 6).

¹⁴ Canadian Institutes of Health Research and United Nations. *UN Research Roadmap for the COVID-19 Recovery*. 2020.

¹⁵ United Nations. *UN Framework for the Immediate Socio-Economic Response to COVID-19*. 2020.

¹⁶ Winkler, Harald, and Frank Jotzo. “Climate policy in an era of polycrisis and opportunities in systems transformations.” *Climate Policy*, vol. 23, no. 10, 2023, pp. 1213–1215.

¹⁷ United Nations Environment Programme (n 11), p. 13.

in cities that are being buffeted by multiple other crises.

Popularised by historian Adam Tooze, the concept of *polycrisis* refers to a set of distinct, interacting crises that lack a single cause but together constitute a systemic global challenge. The Projections 18 group at MIT offers a critical perspective, emphasising cities as sites of practical action and everyday responses to the polycrisis. At the urban scale, lessons from COVID-19 continued to emerge,¹⁸ even as post-pandemic conditions constrained cities' ability to take substantial steps toward net-zero greenhouse gas (GHG) emissions. Routine governance demands—many intensified by the climate crisis itself—often limited cities' capacity to pursue transformative and more equitable change,¹⁹ while the pandemic exposed and exacerbated underlying socio-environmental and socio-economic inequalities.²⁰ For example, COVID-19-related supply chain disruptions and economic pressures²¹ dominated the agendas of elected leaders, at times diverting attention from longer-term climate priorities.

In their review of urban Climate Action Plans, Aboagye and Sharifi²² analysed data collected from 278 cities between 2015 to 2022 to find that more than 81% of cities had adopted a climate mitigation and adaptation plan, with many doing so during the height of pandemic lockdowns. However, the cities' funding,

power, and authority to materialise their goals remain unclear; a lack of concrete details to achieve climate objectives brings into question cities' ability to realise their climate goals, particularly during massive shocks akin to the COVID-19 pandemic. This is further complicated if cities do not possess the enabling conditions, finances or other budgetary or regulatory tools to implement their plans. Simon et al.²³ state that cities such as Manchester, U.K. aspire to be globally leading green cities yet lack institutional capacity and in-house expertise. Aboagye and Sharifi²⁴ highlight that “the real test for local governments lies in the suitability and implementation performance of the plans through effective actions and measures”. The conditions in which cities have had to respond during and post-pandemic have further complicated their efforts to implement their plans, such as achieving net zero Greenhouse Gas (GHG) emissions.

The hope that a “green recovery” would catalyse climate progress in urban areas²⁵, has brought into question post-pandemic progress toward reaching net zero and transitioning to 100 percent renewable energy, two of the leading commitments or claims that cities have made since the onset of the Paris Agreement and the increased participation of cities in global multilateral processes such as the UN Framework on Climate Change

¹⁸ Giles-Corti, Billie, et al. “What Are the Lessons from COVID-19 for Creating Healthy, Sustainable, Resilient Future Cities?” *npj Urban Sustainability*, vol. 3, 2023, p. 29; Mahadevia, Darshini, et al. “Learning from COVID-19 for Climate-Ready Urban Transformation.” *Climate Change and Cities: Third Assessment Report of the Urban Climate Change Research Network*, edited by William Solecki et al., Cambridge University Press, 2025; Simionescu, M., and W. Strielkowski. “The Role of the Internet of Things in Enhancing Sustainable Urban Energy Systems: A Review of Lessons Learned from the COVID-19 Pandemic.” *Journal of Urban Technology*, vol. 32, no. 1, 2025, pp. 103–132.

¹⁹ Snow, David, et al. “Disrupting the ‘Quotidian’: Reconceptualizing the Relationship between Breakdown and the Emergence of Collective Action.” *Mobilization: An International Quarterly*, vol. 3, no. 1, 1998, pp. 1–22.

²⁰ Crisp, Richard, and David Waite. “Building Back Better in Urban Contexts through a Dual Ethics of Justice and Care.” *Urban Geography*, vol. 44, no. 10, 2023, pp. 2271–

2279.

²¹ Nisar, Q. A., et al. “Sustainable Supply Chain Management Performance in the Post COVID-19 Era in an Emerging Economy: A Big Data Perspective.” *International Journal of Emerging Markets*, vol. 18, no. 12, 2023, pp. 5900–5920; Paul, S. K., M. A. Moktadir, and K. Ahsan. “Key Supply Chain Strategies for the Post-COVID-19 Era: Implications for Resilience and Sustainability.” *The International Journal of Logistics Management*, vol. 34, no. 4, 2023, pp. 1165–1187.

²² Aboagye and Sharifi (n 2).

²³ Simon, David, R. Bellinson, and W. Smit.

“Transformational Climate Action at the City Scale: Comparative South-North Perspectives.” *Buildings & Cities*, vol. 3, no. 1, 2022.

²⁴ Aboagye, P. D., and A. Sharifi. “Urban Climate Adaptation and Mitigation Action Plans: A Critical Review.” *Renewable and Sustainable Energy Reviews*, vol. 189, 2024, p. 1.

²⁵ Dantas et al. (n 3); Zhang et al. (n 3)

Conferences of the Parties (COPs).²⁶ Though the return to pre-pandemic work routines remains slow,²⁷ new socio-environmental policies (e.g., urban mobilities, clean air and water, etc.) have shown promise for cities to achieve some sustainable development and smart growth as cities aim to be more resilient for future crises.²⁸ Significant progress towards climate goals remains elusive, however. Through a survey of 30 cities, this paper presents a review of how COVID-19 impacted a select number of cities in the global north and global south, the barriers to “building back better,” and it draws recommendations on how to strengthen cities and other capacity to advance climate progress while withstanding similar level shocks in the future. Against the backdrop of additional crises such as the Ukraine and Middle East conflicts, alongside an assessment of “build back better” interventions, this paper also presents suggestions for further research into the ways in which cities, mobilised against COVID-19, might also learn to maintain decarbonisation actions against the backdrop of polycrises.

II. Literature Review / Background

A. Cities and Climate Action

Cities’ global influence and role have gained increasing visibility in recent decades. While city climate commitments have increased substantially, including the commitments made at COP26 through the UN Race to Zero and those registered in the UNFCCC-hosted Global Climate Action Portal²⁹, they are

insufficient to meet the reductions that the IPCC states are needed to align with a 1.5°C pathway³⁰. Scholarly and practitioner exploration of cities as materially significant sites for climate action has meanwhile expanded. As evident in the IPCC Sixth Assessment Working Group 3 report’s coverage of cities and subnational governments and the planned Special Report on Cities in the upcoming IPCC Seventh Assessment, mitigating climate change and energy consumption in urban areas has become important worldwide³¹. In its 6th Assessment report, the IPCC notes with high confidence that:

The urban share of combined global CO₂ and CH₄ emissions is substantial and continues to increase. Urban areas generated between 67–72% (~28 GtCO₂-eq) of combined global CO₂ and CH₄ emissions in 2020 through the production and consumption of goods and services. These emissions are projected to rise to 34–65 GtCO₂-eq by 2050 with moderate to no mitigation efforts, driven by a growing population, infrastructure, and service demands in urban areas. About 100 highest emitting urban areas account for approximately

²⁶ Obergassel, Wolfgang, et al. “From Regime-Building to Implementation: Harnessing the UN Climate Conferences to Drive Climate Action.” *WIREs Climate Change*, vol. 13, no. 6, 2022, e797; Rocha, A. “Climate governance: cities as global actors.” *Cities in the age of climate change*, edited by C. Amado Gomes, & H. Oliveira, Lisbon Public Law Editions, 2023, pp. 10–30.

²⁷ Brail, Shauna. “COVID-19 and the Future of Urban Policy and Planning.” *Current History*, vol. 121, no. 838, 1 Nov. 2022, pp. 298–303.

²⁸ De Borger, Bruno, and Stef Proost. “COVID-19 and Optimal Urban Transport Policy.” *Transportation Research Part A: Policy and Practice*, vol. 163, 2022, pp. 20–42; Kakderi, Christina, et al. “Smart and Resilient Urban Futures for Sustainability in the Post COVID-19 Era: A Review of Policy Responses on Urban Mobility.” *Sustainability*, vol. 13, no. 11, 2021, p. 6486; Śleszyński, P., et al. “COVID-19 Spatial Policy: A Comparative Review

of Urban Policies in the European Union and the Middle East.” *Sustainability*, vol. 15, no. 3, 2023, p. 2286.

²⁹ Mai, L., and J. P. Elsässer. “Orchestrating Global Climate Governance through Data: The UNFCCC Secretariat and the Global Climate Action Platform.” *Global Environmental Politics*, vol. 22, no. 4, 2022, pp. 151–172.

³⁰ Markolf, Sam, et al. “Pledges and Progress: Steps toward Greenhouse Gas Emissions Reductions in the 100 Largest Cities across the United States.” (*Brookings Institution*, Oct. 2020); Climate Action Tracker. “A Government Roadmap for Addressing the Climate and Post COVID-19 Economic Crises.” (*Climate Action Tracker*, 27 Apr. 2020).

³¹ Intergovernmental Panel on Climate Change (n 1); Intergovernmental Panel on Climate Change. “Report of the Sixtieth Session of the IPCC (Istanbul, Türkiye, 16–19 January 2024).” (*IPCC*, 30 Aug. 2024).

18% of the global carbon footprint.³²

Over recent decades, urban areas have experienced unprecedented growth both in population and infrastructure, sparking a consequent rise in energy consumption. Urban energy consumption has led to a significant increase in global greenhouse gas emissions, resulting in debates about how cities can more effectively meet urban energy demand with renewable sources.

Climate resilience, or resilience as a policy approach, gained traction alongside net-zero city movements, offering a risk- and systems-based lens for public policy and planning—particularly at the urban scale. Efforts to build the field of urban resilience were advanced by institutions such as the Atlantic Council, the Rockefeller Foundation, and UN-Habitat, while international frameworks including the Sendai Framework and the New Urban Agenda helped elevate its prominence in city-level policy. The UN Office for Disaster Risk Reduction (UNDRR) defined resilience as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard”³³. This framing contributed to the integration of systems thinking into urban policy research and practice. Similarly, the IPCC’s Global Action Agenda on Cities and Climate emphasised the interdependence of mitigation and adaptation, underscoring the need for integrated, de-siloed approaches to addressing complex and interconnected urban challenges.³⁴

In addition to their enhanced participation in global climate fora, such as the UN Conference of Parties, city governments that have independent budgetary or regulatory

authority appear to have gained more influence relative to state-level governments, in part due to “rescaling,” which has directed more attention to the local rather than the national context³⁵. There were several new city net zero commitments made via the UN Race to Zero at the 26th Conference of Parties (COP26) in November 2021, a continuation of the city commitment trend within multinational fora since the Paris Agreement at COP15 and the preceding UN Climate Summit in 2014. This was confirmed by the ongoing preparation of the *Special Report, Climate and Cities*, which is expected to be released in 2027, in advance and as an ultimate component of the Seventh Assessment of the IPCC (AR7). Prior to the current net zero movement, one of the most common international targets set by cities was the 100% renewable energy target, also referred to as 100RE. The momentum by cities to set 100RE commitments increased after the Paris Agreement was agreed upon in 2015. Hsu and colleagues (2019) emphasise the role of sub- and non-state actors as ‘implementers’ of climate action, not just as advocates or watchdogs. This said, while data collection to enable policymakers to make decisions has improved, scholars have argued for many years that hard data on actual results from city commitments and programmes is needed.³⁶

B. Bottlenecks During COVID-19: Compact Cities and Stalled Financing

COVID-19 had varying degrees of impact on city climate progress. Initially, it was hoped that lock-down efforts might accelerate a long-term reduction in global and cities’ GHG emissions, as they famously declined and air quality improved.³⁷ However, these impacts were short-lived: while global carbon dioxide (CO₂) emissions fell by 5.4% in 2020, they

³² Intergovernmental Panel on Climate Change (n 1).

³³ United Nations Office for Disaster Risk Reduction. “The Sendai Framework Terminology on Disaster Risk Reduction: ‘Resilience’.” (UNDRR, 2017, accessed on 29 May 2026)

³⁴ Prieur-Richard, Anne-Hélène et al. “Extended version: Global Research and Action Agenda on Cities and Climate Change Science.” (IPCC, July 2019).

³⁵ Hale, Thomas N., et al. “Sub- and Non-State Climate Action: A Framework to Assess Progress, Implementation and Impact.” *Climate Policy*, vol. 21, no. 3, 2021, pp. 406–420.

³⁶ *ibid.*

³⁷ Liu, Zhu, et al. “Monitoring Global Carbon Emissions in 2021.” *Nature Reviews Earth & Environment*, 3, 2022, pp. 217–219.

rebounded by 4.8% in 2021.³⁸ Previously popular resilience and green city core ideas such as compact and dense city design were put to the test during the pandemic. Defining city characteristics such as density of population, retail and housing, coupled with mass transportation and congregation in public spaces turned into health and survival liabilities. For instance, during COVID-19, the highest rates of disease and mortality were seen in several megacities, defined as urban agglomerations with populations greater than ten million people.³⁹ Examples range from Milan, Italy to London, UK, New York, USA, and Johannesburg, South Africa.⁴⁰

The pandemic led to subsequent deficits in domestic budgets, which consequently affected climate action in cities, particularly in developing countries. Shortfalls also arose due to reallocation of climate budgets to health and economic responses.⁴¹ Meanwhile, COVID-19 responses led to fiscal tightening for non-health related matters in already-strapped cities. According to Knuth and Krishnan (2021),⁴² COVID-19 placed communities under financial hardship that continues today. Several cities lost local revenue streams as a response to economic downturns and diverted funds to address the pandemic response. This decreased cities' immediate fiscal capacity to accomplish their climate commitments, leading to calls for infusions of capital from national authorities, multilateral banks, and the private sector.

C. Build Back Better?

Fiscal stimulus and recovery packages offer the possibility of accelerating green transitions in cities. Fiscal packages have two dimensions: the speed by which they can be implemented, and the short-and long- term

economic multipliers they produce.⁴³ While early pandemic rescue packages prioritised speed, COVID-19 recovery packages could be designed to maximise both short- and long-term economic multipliers. According to Hepburn et al, "green stimulus policies often have advantages over traditional fiscal stimulus."⁴⁴ For example, renewable energy projects generate more jobs in the near term, mitigating unemployment amid recession and increasing spending (and thus GDP multipliers).

Hepburn et al draw on earlier literature to emphasise the potential of green recovery packages:⁴⁵

Harnessing more of these opportunities could result in 'kick starting the green innovation machine' and driving an efficient, innovative, and productive economy, with higher spillovers that benefit the wider economy and higher 'green complexity'.

Furthermore, there are 'shovel-ready' low carbon transport, building and electricity projects that, depending on administrative and supply chain capacity, were implemented with speed during COVID-19 while also yielding longer-term economic benefits, such as residential and commercial energy efficiency retrofits. For example, during COVID-19, South Korea started its Green New Deal as part of its green recovery strategy. This programme, which was introduced in July 2020, aimed to direct € 54.3 billion toward green technologies, low-carbon, and integrated energy.⁴⁶

³⁸ *ibid.*

³⁹ United Nations, Department of Economic and Social Affairs, Population Division. *World Urbanization Prospects: The 2018 Revision (ST/ESA/SER.A/420)*. New York: United Nations, 2019.

⁴⁰ United Nations. *A UN Framework for the Immediate Socio-Economic Response to COVID-19*. United Nations, 2020.

⁴¹ Sadler, A., et al. (n 6).

⁴² Knuth, Sarah, and Anantha Krishnan. *Climate Finance for Cities and Urban Governments*. The British Academy,

2021.

⁴³ Hepburn, Cameron, et al. "Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?" *Oxford Review of Economic Policy*, vol. 36, suppl. 1, 2020.

⁴⁴ *ibid.*

⁴⁵ *ibid.*

⁴⁶ D'Ambrogio, Elena. *South Korea's Pledge to Achieve Carbon Neutrality by 2050*. European Parliamentary Research Service, 2021.

Targeting green recovery funds to state and local governments had the potential to accelerate economic benefits during the pandemic-induced recession. As Stiglitz notes, state and local government budgets at the onset of the pandemic were “badly stretched”⁴⁷, reflecting both the costs of emergency response and significant revenue shortfalls. Resulting budget and spending cuts at the local level risked substantial long-term multiplier effects that could “induce a significant contraction in GDP”.⁴⁸ Prioritising state and local governments in recovery packages—and directing those funds toward green investments—could have helped mitigate these impacts⁴⁹. However, global analyses indicate that this potential was largely unrealised. Only 3% of rescue and recovery spending worldwide was directed toward green investment.⁵⁰ As the focus shifted from rescue to recovery, just 21% of spending in advanced economies supported green investments as of 2021.⁵¹ In many vulnerable countries, a green recovery remained out of reach. Recovery packages were often debt-financed, posing challenges for countries and cities with limited creditworthiness or constrained access to affordable borrowing, thereby restricting their ability to mobilise low-interest finance.⁵²

Newman (2020) asserted that zero-carbon innovations were expected to play a pivotal role in shaping the post-COVID-19 economy, and that cities will be at the helm in this innovation and adoption.⁵³ Early research, however, shows that cities have been unable to harness COVID-19 response and recovery efforts to also accelerate climate progress at the pace and scale that Newman envisioned.⁵⁴ The stress testing of health

systems, and administrations of all levels would indicate that the resilience of administrations would have improved across many levels as cities learned to become more resilient and efficient in response to the health crisis. Some studies point to a record of enhancements in usage of digital governance approaches or rationalising of decision-making in public administrations⁵⁵ while there has also been a knock-on effect of fiscal stimulus⁵⁶ that has supported cities to build resilience in their political systems. Such considerations warrant further research as cities seek to build other climate responses.

While recovery programmes tended to focus more on health system resilience, infrastructure or on the development of future technologies, adaptation and resilience investments were also implemented, but according to researchers, largely in the economies that are highly developed and more resilient to climatic hazards as middle-income or emerging economies.⁵⁷ A study of 67 countries highlighted that 41% of advanced economies such as the UK, France, or the US were able to find the fiscal space to invest in better adaptation and resilience measures during and through the COVID-19 pandemic, only 21% of lower middle-income countries have been able to do so.

D. Progress Across Transport, Housing, Municipal Solar and Enabling Policies

Despite, and sometimes in response to, COVID-19, positive progress towards climate goals has been seen in numerous cities across the world and in different sectors. A few examples are described here. One bright spot from the pandemic is the furtherance of the

⁴⁷ Stiglitz, Joseph. *Four Priorities for Pandemic Relief Efforts*. The Roosevelt Institute, 2020.

⁴⁸ *ibid* at 14.

⁴⁹ Hepburn et al (n 43).

⁵⁰ Oxford University Economic Recovery Project. *Are We Building Back Better: COP26 Update*. 2021.

⁵¹ Organisation for Economic Co-operation and Development (n 6).

⁵² Deuskar, Chandan, et al. *Banking on Cities: Investing in Resilient and Low-Carbon Urbanization*. World Bank, 2025.

⁵³ Newman, Peter. “COVID, Cities and Climate: Historical Precedents and Potential Transitions for the New Economy.” *Urban Science*, vol. 4, no. 3, 2020.

⁵⁴ Mahadevia et al. (n 18).

⁵⁵ Špaček, D., M. Navrátil, and D. Špalková. “New Development: COVID-19 and Changes in Public Administration—What Do We Know to Date?” *Public Money & Management*, vol. 43, no. 8, 2023, pp. 862–866.

⁵⁶ Sadler, A., et al. (n 6).

⁵⁷ *ibid*.

idea of the “15-minute City”—an idea conceived by French scientist Carlos Moreno.⁵⁸ The 15-minute city calls for a decentralised city, one in which residents each have all their daily needs within a 15-minute walking or biking distance - including their workplaces and retail. An idea originated to cut GHG emissions, proponents of the strategy cite multiple social benefits, such as greater access to quality food and urban greenspaces. The pandemic enabled cities to make progress towards this vision where previous bottlenecks existed. For example, as a pandemic response, Toronto expanded bike lanes by 25 kilometres in the summer of 2020; a University of Toronto study shows that it increased low-stress accessibility to jobs and retail by 10 and 22%, respectively. With this early success, Toronto City Council voted in December 2021 to approve a plan to add 100 kilometres of bike lanes by 2024.⁵⁹

According to Patka and Miller (n.d.),⁶⁰ COVID-19 pandemic had the potential to also change how real estate owners in New York City manage their assets. In the post-pandemic era, Local Law 97 (LL97), the implementation planning for which began during COVID despite the law passage in 2019 and its official implementation date beginning in 2024, requires building owners in the city to provide heightened health and safety measures to their tenants, in addition to emissions reductions. While LL97 was drafted before the onset of the pandemic, its implementation advanced during COVID; in fact, several major corporations in New York such as Google are responding to the law by co-investing in new solar capacity, in collaboration with the City government.

In Mexico City, while several climate commitments were initially stalled during COVID-19 due to diverted response efforts and

programmes to meet the economic inequities revealed during the pandemic,⁶¹ most stalled projects were back on track by late 2022, and programmes announced just before the pandemic, such as the Solar City plan, are now releasing implementation plans and near-term targets. In addition, some COVID-19 response efforts in the city revealed secondary climate benefits such as the bike system introduced during the pandemic.

E. Can Cities Actions During COVID-19 Help Us to Learn in the “Polycrisis”?

COVID-19 appears to have ushered in an era, or at least a perception of, “polycrisis” or “permacrisis” in which climate impacts, social inequality, and global conflict coalesce, and present a challenge to net-zero ambitions. Many international organisations have also emphasised the need to address the interconnectedness of current global challenges especially associated with climate change, and advocate for coordinated efforts that promote resilience, cross-sectoral collaboration, and long-term sustainable development to mitigate the impact of such “polycrisis”, for example, UNEP’s “triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste,”.⁶² UNDP’s report on long term planning in the context of the polycrisis highlights that “reducing risk in one area might cause an increase in risk in another”, suggesting that planning or building back better may still be crucial in the context of new crises that have replaced or been generated by COVID-19. This highlights an opportunity for holistic and systemic approaches to decarbonisation strategies on the city level. Cities interviewed as part of this study such as New York, London and Mexico City remain global centres for wealth but also of progressive climate policies. Crucially, cities continue to produce or be responsible for over 70% of global CO₂

⁵⁸ Allam, Zaheer, et al. “The 15-Minute City Offers a New Framework for Sustainability, Livability, and Health.” *The Lancet Planetary Health*, vol. 6, no. 3, 2022, pp. e181–e183.

⁵⁹ Lin, Bo, Timothy C. Y. Chan, and Shoshanna Saxe. “The Impact of COVID-19 Cycling Infrastructure on Low-Stress Cycling Accessibility: A Case Study in the City of Toronto.” *Findings*, 2021.

⁶⁰ Patka, Y. T., and D. Miller. “COVID-19’s Effect on Local Law 97—or Lack Thereof.” *Lexis Practice Advisor*, Duval & Stachenfeld LLP.

⁶¹ Madry, K. “COVID Exposes Mexico City’s Water Access Gap between Rich and Poor.” (*Climate Home News*, 2020).

⁶² United Nations Environment Programme (n 11) p. vii.

emissions⁶³. Survey evidence shows a substantial increase in concern about climate change between 2016 and 2021, followed by a modest additional rise between 2020 and 2021, suggesting that the COVID-19 pandemic may have contributed to this trend. This interpretation is supported by findings from the IMF and other empirical studies.⁶⁴

The survey, conducted between April 2021 and January 2022, provides insights into how cities advanced their climate commitments during COVID-19 and highlights strategies for sustaining net-zero trajectories in the broader polycrisis context.

III. Methods and Results

During 2021 and 2022, a survey was distributed to assess city net zero and renewable energy commitments, plans and financing underway, and state of progress during COVID-19. The survey aimed to answer the following questions:

1. How are cities implementing energy transition targets and commitments that are outside and inside their jurisdictional responsibility;
2. How is energy transition addressed in city net zero commitments, and;
3. How has COVID-19 altered the timing and/or implementation of those targets.

Based on the survey, interviews and a review of the literature on “green recovery” and “Build Back Better,” conclusions were developed to assess cities’ positions along these trajectories and the extent to which early expectations were realised.

City participation was based on a purposive sampling strategy rather than predefined selection criteria. To ensure broad geographic and economic representation—including cities

beyond large, well-resourced metropolitan areas in high-income countries—the survey was distributed through a combination of global city networks spanning cities of varying sizes and those located in the global north and south. This network-based approach enabled outreach to a diverse set of cities across different regions and governance contexts, though it does not constitute a statistically representative sample. The survey was distributed through leading global city networks, including C40—which comprises 96 cities with populations over three million—and ICLEI, a network of approximately 2,500 primarily secondary and tertiary cities. The survey was also disseminated through the South African Local Government Association (SALGA), the Swedish Viable Cities Network, and the European Council for an Energy Efficient Economy (ECEEE). A copy of the survey is provided in **Appendix 1**.

As a result of this outreach, responses were received from 39 subnational leaders, representing 30 cities, two organisations, two national governments, and two state governments. One city—Kisumu, Kenya—submitted two responses: one from a net-zero policy advisor and another from a renewable energy policy advisor. As the net-zero advisor completed a greater portion of the survey, only that response was included in the analysis for consistency. In addition, interviews were conducted with leadership at C40 and with officials in the climate change departments of Jakarta, Johannesburg, London, Mexico City, and New York to further examine progress in megacities. The University of Oxford Central University Research Ethics Committee (CUREC) reviewed and approved the survey and associated research.

⁶³ World Bank. Published on Sustainable Cities “Cutting Global Emissions: Where do Cities Stand” (*World Bank Blog*, Dasgupta et al 05 Jan 2022)

⁶⁴ Drews, Stefan, et al. “Climate Concern and Policy Acceptance before and after COVID-19.” *Ecological Economics*, vol. 199, 2022, p. 107507; Mohommad, Adil, and Evgenia Pugacheva. “Impact of COVID-19 on Attitudes

to Climate Change and Support for Climate Policies.” IMF Working Paper No. WP/22/23, International Monetary Fund, 2022; Stefkovics, Ádám, et al. “Climate Change Worry in the Times of the COVID-19 Pandemic: Evidence from Two Large-Scale European Surveys.” *Climate Risk Management*, vol. 44, 2024, p. 100599.

A. Survey Responses

Responses were received from 30 cities in 11 countries from four global regions, including Asia Pacific, Europe and the U.S., Latin America, and Sub-Saharan Africa (**Table 1**). Representatives completing the survey included mayors, heads of environment and sustainability, and political advisors or directors with decision making authority over net zero and renewable energy commitments.

B. Climate Ambitions

Cities participating in the survey reported varying levels of climate ambition across renewable energy, fossil fuel phase-out, and net-zero targets. Most cities from Europe and the United States indicated that all three types of targets were in place (**Table 1**). In Sub-Saharan Africa, many surveyed cities (4 of 7) reported having set net-zero targets, though most had not yet adopted formal targets for 100% renewable energy or fossil fuel phase-out. Cities in Latin America and the Asia-Pacific region were least likely to have established formal targets across these areas.

Notably, a majority of participating cities reported plans to invest in renewable energy. Given the limited renewable generation potential within city boundaries, these plans were often focused on distributed and enabling measures. Among cities that specified their approaches, most highlighted integrated solar solutions—particularly installations on municipally owned buildings—alongside the deployment of energy management systems across public facilities. Many also emphasised collaboration with state or national governments to transition the broader energy mix supplying the city toward renewable sources.

C. Reported Progress on Renewable Energy Investment and Fossil Fuel Phase Out Plans During COVID-19

1. How Were Renewable Energy Investments and Fossil Fuel Phase Out Plans Affected?

Slightly more than half of cities reported delays of renewable energy investments during the pandemic due to COVID-19 (**Table 3**). However, this differed by region: only 2 of

the 9 cities in Europe and the U.S. reported delays, while 7 of 10 Latin American cities reported COVID-19 related delays.

Interestingly, cities with fossil fuel phase out targets reported staying on course with those plans more frequently than with their renewable energy investment plans (**Table 4**).

Cities in some of the most fossil fuel-dependent countries surveyed in the Global South—Argentina, Indonesia, Mexico, the Philippines, and South Africa—reported delays in renewable energy investment projects. Where delays occurred, they were primarily attributed to reduced internal capacity, as cities redirected staff and resources toward immediate pandemic response priorities. In contrast, none of the five U.S. cities reported delays or halted renewable energy projects.

Increased pressure on city budgets due to COVID-19 and its economic impacts was the most cited driver of delays in renewable energy investments. Cities most frequently identified factors related to diverted resources and attention to pandemic response (39%) and staffing and workforce reductions (30%). By comparison, changes in anticipated financing or reductions in national or state government funding were cited less often. This pattern was broadly consistent across regions, with one exception: in Sub-Saharan Africa, cities reported financing and credit-related bottlenecks as frequently as pandemic response-related factors, such as staff reallocation.

2. In What Ways Did the Pandemic and Related Green Recovery Plans Facilitate Progress?

Four cities reported that green recovery plans introduced new policy frameworks enabling renewable energy investments (**Table 6**). Meanwhile, 11 surveyed cities indicated that COVID-19-related policy changes supported progress toward fossil fuel phase-out goals (**Table 7**). Notably, several of the cities reporting such enabling policies are in coal-dependent countries, including Jambi and Jakarta (Indonesia), Makati and Mataram (Philippines), New York City (USA), and

Ekurhuleni and Rustenburg (South Africa). When asked more broadly about the effects of COVID-19 on renewable energy efforts, cities also identified a range of indirect enabling factors. These included increased public demand for city budget reallocations and job creation opportunities that improved the affordability of renewable energy projects. While green recovery plans did not consistently deliver the expected scale of impact on city climate progress, these findings suggest that the pandemic contributed to climate action through more indirect pathways.

3. Did the Extent to Which a City Receives External Support Have an Impact on Their Progress During COVID-19?

When analysing reported city progress on renewable energy, a correlation was observed between project advancement and the availability of external climate finance. As shown in **Figure 1**, cities that received funding from development banks such as the World Bank or climate finance mechanisms such as the Green Climate Fund (GCF) reported higher rates of success and fewer bottlenecks in delivering renewable energy projects during COVID-19. This finding reinforced the case that international and national financing for city climate ambitions warranted greater attention. As Knuth and Krishnan (2021) noted in an analysis of urban climate finance flows and constraints, “important new experiments seek to grow urban governments’ and players’ direct financial options, as well as channel climate financing resources to urban populations through more centrally organised schemes.”⁶⁵

4. Megacity Analysis: Jakarta, Johannesburg, London, Mexico City, and New York

Five megacities participated in the survey: Jakarta, Johannesburg, London, Mexico City and New York. All five cities reported encountering delays in their renewable energy projects, primarily due to increased budget pressures and reallocations linked to COVID-19. New York, London, and Mexico City reported delays stemming from internal

decision-making constraints and slowed approval processes during the pandemic, as well as the redeployment of climate and environment staff to emergency response roles and staffing shortages resulting from recruitment freezes and redundancies. New York and Jakarta faced implementation holds on climate projects, while New York and London reported that shutdown measures reduced the workforce available for project implementation.

These delays did not ultimately prevent the delivery of renewable energy projects or the advancement of infrastructural policies supporting low-carbon transitions. New York and London reported that COVID-19 recovery and stimulus packages (green recovery plans) introduced new policy frameworks that enabled incremental renewable energy procurement. Johannesburg and London noted that job creation opportunities associated with new renewable energy projects improved the cost-effectiveness of such investments. Jakarta and London highlighted that recovery and stimulus packages provided new funding to advance projects. London further reported that COVID-19 response measures and policies incentivised renewable energy deployment, while New York indicated that increased citizen demand encouraged mayoral allocation of budgets toward renewable energy investments.

For some cities, green recovery plans and stimulus packages led to new financing and policy support for renewable energy commitments. Mexico City reported that COVID-19 response measures and policies incentivised renewable energy projects, while recovery and stimulus packages provided new policy frameworks to enable fossil fuel phase-out in London and new funding in Jakarta. In contrast, Johannesburg had not yet benefited from green recovery or stimulus packages, and COVID-19 remained the primary reason for delays or constraints on the city’s renewable energy commitments. Two megacities also reported that changes in national government leadership affected their

⁶⁵ Knuth, Sarah, and Anantha Krishnan (n 42).

ability to implement climate commitments. In New York, changes in U.S. national leadership incentivised increased financial support for renewable energy commitments, while in Johannesburg, changes in South African national leadership enabled new incentives and support for fossil fuel phase-out commitments.

IV. Discussion: Implications for Decarbonisation and Resilience Building in the Era of the “Polycrisis”

Findings from the survey and interviews indicate that the transformative “Build Back Better” outcomes anticipated at the outset of the pandemic were largely unrealised, with city climate and energy progress shaped more by financing, governance capacity, and enabling policy conditions than by the pandemic itself. As governments assembled fiscal recovery packages, the narrative of a “green recovery” raised expectations that, despite the pressures on city governments, climate action could be accelerated through unprecedented investment in green infrastructure and jobs. Three years after the pandemic’s official end, however, the evidence suggests a more mixed picture of COVID-19’s impact on city climate action.

That said, the findings point to some increase in resilience-related measures, particularly associated with new funding flows to cities through COVID-19 recovery programmes. While **Table 5** shows that city systems were strained as staff and resources were redirected to immediate response efforts, **Table 6** indicates that broader strategies and policies continued to be developed and implemented as cities began to receive economic stimulus support. During the COVID-19 recovery phase, fiscal spending presented an opportunity to systematically strengthen resilience and improve adaptation to future environmental shocks. However, this opportunity was unevenly realised, with an imbalance between mitigation and adaptation investments. Adaptation and resilience

accounted for only one-third of the funding directed toward climate mitigation and were referenced just one-seventh as frequently in policy documents.⁶⁶ A further question is whether this balance between adaptation and mitigation is fit for purpose in a context of “polycrisis.” Integrated megacity strategies—such as PlaNYC—that combine decarbonisation and resilience planning may offer a more effective model for addressing multiple, overlapping risks. Such approaches suggest that adaptation and resilience measures aimed at reducing vulnerability can also help buffer cities against future shocks associated with the polycrisis.

Findings from OECD⁶⁷ and WRI since the above survey was undertaken also highlight that adaptation and resilience measures have had even less traction, at least in developing economy cities, raising policy questions for decision-makers hoping to maintain the momentum of the stimulus and green recovery packages in the context of high inflation and increasingly evident impacts of climate hazards in cities. Additionally, external financing (i.e., beyond municipal budgets) were correlated with progress and may have enabled continued focus on climate plans when municipal resourcing was diverted to pandemic response. These findings reveal that injections of financing could further unlock progress and could be a helpful lesson for current energy economic instability exacerbated by geopolitical conditions and for the inflationary pressures that vulnerable populations have come under globally.

Despite initial setbacks, as city governments, budgets, and workforces were stretched in responding to the pandemic, evidence from surveys, interviews, and the literature indicates that new financing and supportive policy conditions enabled continued progress during COVID-19. However, analyses of recovery policies and green stimulus allocations suggest these enabling conditions were neither sufficiently widespread nor sustained to meaningfully accelerate city

⁶⁶ Sadler et al. (n 6).

⁶⁷ Organisation for Economic Co-operation and

Development (n 6).

climate action. Subsequent findings from OECD⁶⁸ and WRI⁶⁹ further show that adaptation and resilience measures have gained even less traction—particularly in cities in developing economies—raising important policy questions for decision-makers seeking to maintain momentum from stimulus and green recovery packages amid high inflation and escalating climate risks. At the same time, access to external financing (i.e., beyond municipal budgets) was correlated with continued progress, suggesting it helped sustain climate efforts even as local resources were redirected to pandemic response.

Taken together, these findings underscore the importance of sustained and scaled financing to unlock further progress. They also point to a broader lesson for navigating current energy market volatility and inflationary pressures: targeted financial support can help cities maintain climate ambition while protecting vulnerable populations under increasingly strained economic conditions.

While predictions of large-scale urban transformation following COVID-19 have not materialised, opportunities remain to build back better and sustain city-level climate action, even where national priorities constrain progress. The following recommendations outline pathways to enable this transformation:

- **National governments** could re-engage cities and provide targeted support to accelerate green recovery measures through enabling policy frameworks and decentralised funding mechanisms.
- **Resilience and decarbonisation** could be integrated into unified climate plans, with resilience measures helping to stabilise city systems and sustain momentum on decarbonisation and investment. This integration could also inform the revision of Nationally Determined

Contributions (NDCs) and National Adaptation Plans.

- **Cities**, together with networks such as C40 and ICLEI, could leverage proximity to private finance and corporate actors, and develop shovel-ready projects suited for blended finance and innovative instruments, including multi-city bond issuances.
- **City networks and multilateral institutions** could establish systemic resilience and vulnerability reduction programmes that reflect the realities of the polycrisis, while helping to safeguard decarbonisation efforts from cascading risks.
- **National, regional, and international financial institutions** (e.g., the World Bank and other Development Finance Institutions, DFI's) could expand efforts to de-risk urban climate projects and provide access to pooled capital that does not require sovereign guarantees, alongside dedicated funding windows to support progress across resilience and mitigation.
- **Financial institutions** could also accelerate city creditworthiness programmes—particularly in the Global South—and enable mechanisms for cities to jointly issue green recovery bonds.
- **Research agendas** could further examine the role of resilience measures as enabling systems for decarbonisation strategies, particularly in the context of constrained climate finance and rising costs associated with climate-related disasters.

These actions represent a starting point for applying lessons from COVID-19 to build more resilient urban systems across both the Global North and Global South.

⁶⁸ *ibid.*

⁶⁹ Brandon, Carter, et al. Strengthening the Investment

Case for Climate Adaptation: A Triple Dividend Approach. World Resources Institute, May 2025.

V. Conclusion

While COVID-19 affected city climate commitments and implementation trajectories unevenly, the overarching trend is one of continued progress. In the years following the pandemic, cities—including under-researched cities in the Global South—have continued to adopt new climate and renewable energy transition commitments. In some cases, such as Jakarta, recovery and stimulus packages introduced policy frameworks that support fossil fuel phase-out. At the same time, international initiatives like the UN Race to Zero, launched in 2020, helped catalyse new commitments, alongside targeted funding and government and municipal utility incentives. City officials and coalitions also continue to develop new financing mechanisms to deliver on existing commitments and partner with state and national governments, corporations and utilities to enact policy changes and install new renewable energy capacity to power their consumption.

While examples of good practice have emerged in many places, there is limited evidence that COVID-19 has fundamentally reshaped cities at scale, as some institutions and academics anticipated—for example, through widespread housing and building retrofits, sustained reductions in energy consumption, or the broad adoption of vehicle-free street policies. To date, promises to “build

back better” have not been realised; however, with stronger national and international policy frameworks, increased financing, and the application of lessons from COVID-19, there remains an opportunity to strengthen the resilience of city climate commitments.

Importantly, city resilience must be strengthened well before crises occur, requiring direct financing, greater regulatory authority over transport and energy systems, and measures to bolster supply chain resilience. COVID-19 demonstrated both cities’ willingness to advance mitigation and adaptation and the fragility of their implementation capacity. National governments, along with regional and global institutions and financial actors, can provide the enabling policy frameworks and financing needed for cities to deliver ambitious transition plans, improve their capacity to absorb future shocks, and sustain the durability of their climate commitments.

Paradoxically, while COVID-19 catalysed greater awareness and strengthened cities’ commitment to invest in climate solutions, it also exposed the structural barriers they face in delivering large-scale, cross-sector transformations. In this respect, the pandemic underscored the need for long-term governance reforms that equip cities with the authority, capacity, and resources to absorb future shocks.

City	Country
Mataram City	Indonesia
Special Capital Region of Jakarta	Indonesia
Jambi City Local Government	Indonesia
City Government of Cagayan de Oro	Philippines
City Government of Makati	Philippines
City Government of Pasig	Philippines
City of Växjö	Sweden
Izmir Metropolitan Municipality	Turkey
Greater London Authority	United Kingdom
New York, New York	United States
Montpelier, Vermont	United States
Spokane, Washington	United States
Asheville, North Carolina	United States
Nashville, Tennessee	United States
Municipality of La Plata	Argentina
Municipality of Del Carmen	Mexico
City Hall of San Cristóbal de las Casas	Mexico
Santiago de Querétaro	Mexico
Guadalajara, Jalisco	Mexico
León, Guanajuato	Mexico
Government of Mexico City	Mexico
San Pedro Tlaquepaque, Jalisco	Mexico
Toluca, Mexico	Mexico
Kisumu	Kenya
County Government of Nakuru	Kenya
Quelimane Municipality	Mozambique
City of Ekurhuleni	South Africa
Rustenburg Local Municipality	South Africa
Nelson Mandela Bay Municipality	South Africa
City of Johannesburg	South Africa

Table 1: Survey Respondents.

		Asia Pacific	Europe and the U.S.	Latin America	Sub-Saharan Africa	All Cities
8. Has your government or organisation committed to a <u>100% Renewable Energy Target</u> ?	Yes		6	1	2	9
	No				1	1
	My government or organisation is discussing this commitment but has not officially adopted it as of this survey Date	5	2	7	2	16
	My government or organisation has another renewable energy target.	1		1	2	4
15. Has your government or organisation committed to a Fossil Fuel Phase-out Target?*	Yes, for oil, gas, and Coal		4	1		5
	Yes, for oil and gas			1	1	2
	Yes, for coal only		1		2	3
	No	5	3	7	4	19
18. Has your city government or organisation committed to a net zero by 2050 target? (Please select all that apply.)**	Yes	1	4	4	4	13
	The net zero target we have established is earlier than 2050	0	2	0	2	4
	My government or organisation has made another significant climate action commitment (e.g., 1.5 aligned climate action plan.)	1	0	2	0	3
	No, we have not yet established a net zero target	4	3	3	3	13

Table 2: Reported City Climate Commitments by Region. Note: When cities refer to renewable energy targets, there may be variation in what they mean. Most frequently, city renewable energy goals apply to electricity under city jurisdictions, not the entire electricity consumption of that city. Rooftop solar on municipal buildings and waste to energy systems are frequently included in these plans. Less frequently, cities collaborate with state/provincial governments to increase the energy mix that feeds the city.

*Question 15: One Asian Pacific city skipped this, making the total number of city respondents 33 for this question.

**Question 18: One Latin American city skipped this question. Additionally, cities could select more than one answer choice, so totals will be greater than the number of cities responding.

		Asia Pacific	Europe and the U.S.	Latin America	Sub-Saharan Africa	All cities
37. Have any planned renewable energy investment projects been delayed due to COVID-19?	No , none have been delayed	4	6	3	3	16
	Yes , one or more have been delayed	2	2	6	4	14
	Total	6	8	9	7	30

Table 3: Cities Reporting Delays Due to COVID-19 by Region. Note: Two cities reporting no delays also reported not having a renewable energy commitment.

	37. Have any planned renewable energy investment projects been delayed due to COVID-19?	38. Have any planned fossil fuel (coal, natural gas, and/or oil) phase out plans been delayed due to COVID-19?
Yes, one or more have been delayed	5	2
No, none have been delayed	6	9

Table 4: Reported Delays in Cities with Fossil Fuel Phase Out Targets.

	Asia Pacific	Europe and the U.S.	Latin America	Sub-Saharan Africa	Grand Total	Frequency responses were chosen in this category
Category 1: Reasons related to changes in anticipated financing	1	1	0	7	9	11%
Anticipated financing or credit for project has been cut back	1	1		2	4	
Anticipated financing or credit for project has not been received				3	3	
Anticipated financing or credit for project is delayed				2	2	

Category 2: Reasons related to the reduction and/or removal of national or state government financing	3	0	1	1	6	8%
Previous National Government financial incentives have been removed due to COVID-19 priorities, introducing financial constraints	2				2	
Previous State/Provincial Government financial incentives have been removed due to COVID-19 priorities, introducing financial constraints	1		1	1	3	
Category 3: Reasons related to diverted City resources and attention due to pandemic response	8	6	9	8	31	39%
COVID-19 has taken priority for the city government and all climate and renewable energy implementation is on hold	4	1	3	2	10	
Increased pressures on city budget due to COVID-19 and related economic impacts	2	3	4	3	12	
Internal decision making/ approval processes have slowed due to COVID-19	2	2	2	3	9	
Category 4: Reasons related to staffing and workforce reductions due to pandemic response	5	8	4	7	24	30%
City climate/envirom	1	2	1	2	6	

ment workforce redeployed for COVID-19 response						
COVID-19 shutdown measures have reduced the workforce needed for project implementation	3	3	1	3	10	
Staffing shortages resulting from recruitment freezes/redundancies	1	3	2	2	8	
N/A. We have not experienced delays due to COVID-19		3	2	1	6	8%
*Other	1	2		1	4	5%
Total	18	20	16	25	80	

Table 5: Reasons for COVID-19 Related Delays for Renewable Energy Investment Projects. *Note:* Frequency totals greater than 100% due to rounding.

Category of response	Response	Number of times cities selected this response, by region					Frequency the response category was selected	
		Asian Pacific	Europe and the U.S.	Latin America	Sub-Saharan Africa	All Cities	#	%
Political momentum	Citizen demand has encouraged Mayoral allocation of budgets to renewable energy investments		2		1	3	7	13.0%
	Geopolitical changes during COVID-19 (e.g. changed leadership in key national economies) has incentivized support for renewable	1	1	2		4		

	energy commitment s							
Policy frameworks	COVID-19 recovery and stimulus packages (green recovery plans) provide new policy frameworks to enable fossil fuel phase out		2		3	5	13	24.1%
	COVID-19 recovery and stimulus packages (green recovery plans) provide new policy frameworks to enable renewable energy investments	1	2		1	4		
	COVID-19 response measures and policies have incentivized renewable energy projects		1	1	1	3		
	The measures and policies in response to COVID-19 have encouraged renewable energy projects			1		1		
Funding	COVID-19 recovery and stimulus packages have provided new funding	3	1			4	4	7.4%
Job creation opportunities	Increased attention on renewable energy as job creation because of existing energy crisis.				1	1	8	14.8%

	Job creation opportunities from renewable energy have made renewable investments more cost effective	1	1	1	4	7		
Other			2	1		3	3	5.6%
COVID-19 has had little to no impact on renewable energy projects one way or the other.			1			1	1	1.9%
N/A. COVID-19 has delayed or hindered my city or organisation's renewable energy commitments.		2	3	7	6	18	18	33.3 %
Grand Total		8	16	13	17	54		

Table 6: Factors and Supports that Have Helped Advance Renewable Energy Projects During COVID-19.

What is the most important factor during COVID- 19 that has helped your city or organisation to implement its fossil fuel phase out commitments?	Asian Pacific	Europe and the U.S.	Latin America	Sub-Saharan Africa	All Cities
COVID-19 recovery and stimulus packages (green recovery plans) provide new policy frameworks to enable fossil fuel phase out	4		2	3	9
COVID-19 recovery and stimulus packages have provided new funding to phase out fossil fuel projects				1	1
COVID-19 response measures have eliminated funding for fossil fuel projects			1		1
Geopolitical changes during COVID-19 (e.g., changed leadership in key national economies) has incentivized support for fossil fuel phase out commitments		1	1		2
Other			2		2
Grand Total	4	1	6	4	15

Table 7: Factors that Have Supported Fossil Fuel Phase Out.

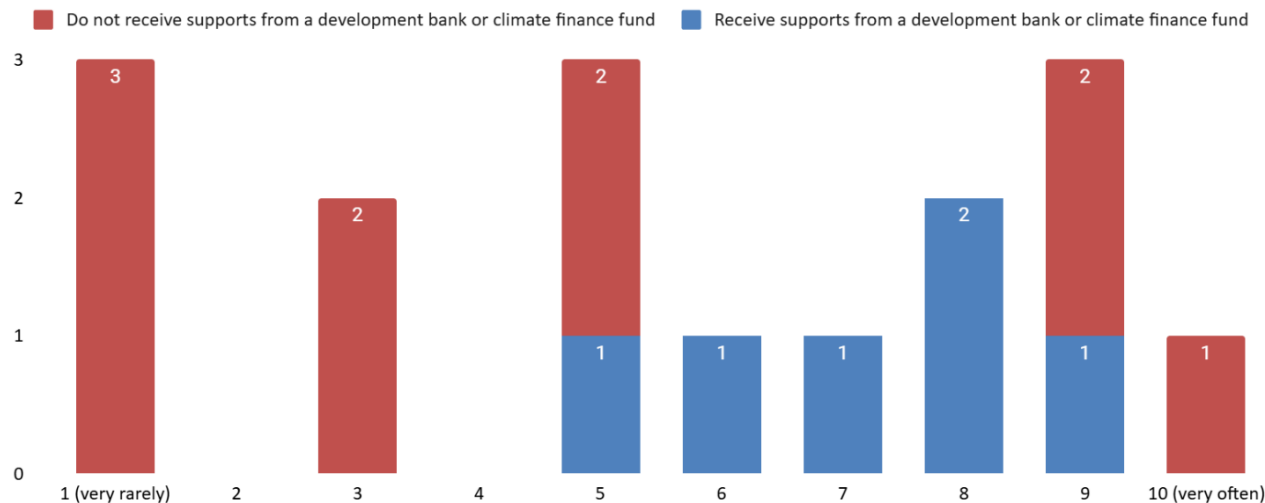


Figure 1: Frequency of Reported On-Time Completion of Renewable Energy Projects and Supports from Development Bank or Climate Fund. (n=16; 14 cities skipped or responded N/A to the question regarding how often renewable energy investments had been delayed.)