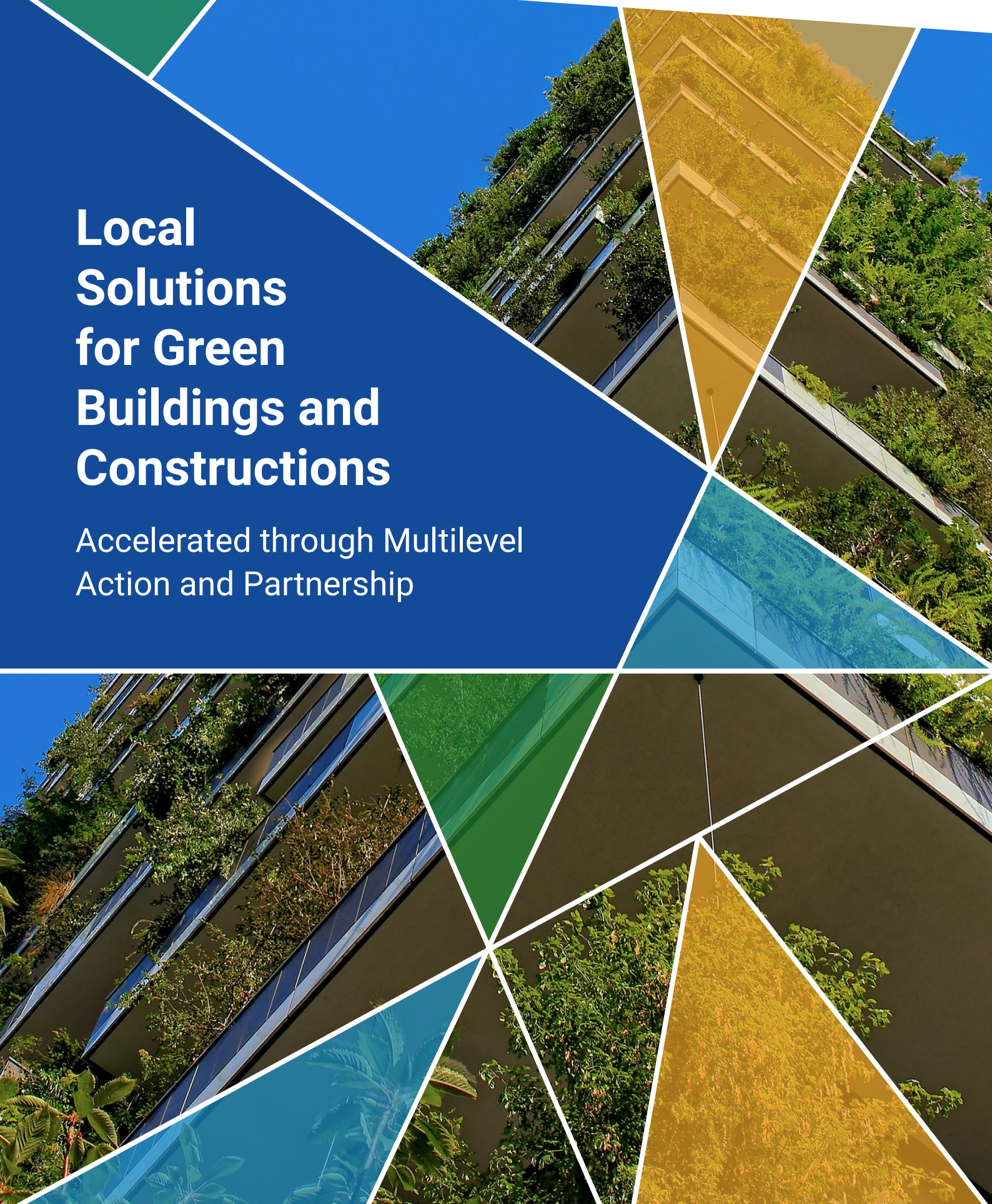
Global Alliance for Buildings and Construction

ICLEI Local Governments for Sustainability

UN environment programme

Local Solutions for Green Buildings and Constructions

Accelerated through Multilevel Action and Partnership



This publication aims to inform and inspire decision-makers and officials at all levels of government and their key partners from private sector, civil society, NGOs, investors and donors. It presents opportunities to decarbonize the building and construction sector while enhancing climate resilience through effective multilevel governance and strong and well-coordinated multilevel partnerships to enhance and scale up local action.

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ABOUT GlobalABC SUBNATIONAL ACTION GROUP

The Subnationals Action Group of the GlobalABC was initiated in April 2024 to accelerate local solutions for a just and inclusive transition towards a decarbonized and resilient buildings and construction sector. The Action Group brings together over 15 significant global organisations, including national governments, city networks, NGOs, research institutions and sector associations. It aims to facilitates global multi-level stakeholder dialogues, enables sustainable economic development, and mobilizes climate finance.

ABOUT ICLEI - LOCAL GOVERNMENTS FOR SUSTAINABILITY

ICLEI – Local Governments for Sustainability is a global network working with more than 2500 local and regional governments committed to sustainable urban development. Active in 125+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development.

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Contents

1. Executive summary

Objective of the report

Localizing climate action is the cornerstone of a sustainable transformative shift towards decarbonized, resilient buildings and construction. There is huge potential to strengthen this sector in the updated Nationally Determined Contributions (NDCs), by enabling sectoral linkages between buildings, energy, water, and waste and by involving subnational governments and private sector in these efforts. Embedding the just and equitable transition for all, and building a strong multi-stakeholder partnership approach for NDC implementation and investment are also essential for this transformation.

This first GlobalABC report gives a closer look at the subnational climate action for the building and construction sector. Exploring multilevel action and partnership, the report outlines opportunities for action, showcases examples of how to respond to challenges through accelerating action, and concludes with recommendations for several key stakeholder groups. Throughout the document, the role of key actors and their contributions are focused on. This is relevant to collectively contributing to the Sustainable Development Goals (SDGs), local to global climate targets (climate resilience, adaptation, mitigation and sufficiency), as well as the sustainable energy transition, and a just, equitable, inclusive, people-centered, and place-based approach. There is significant potential to raise the level of ambition and create favourable circumstances for collective action, which can be reflected in the Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), and other strategic or policy documents.

With more than half of the global population living in urban areas, expected to rise to 68% by 2050 (UN-Habitat, 2022), local and regional governments in particular are at the forefront in defining and implementing climate response efforts in their territories. Nearly 70% of climate-related public investment is undertaken by subnational governments (OECD, 2022), yet the actual finance need is estimated to be trillions of US dollars, and cannot be covered by public funds alone. Thus, this report focuses on the actions subnational governments and their partners can take to step up planning and implementation in their territories and own operations by addressing resilience, decarbonization, circularity, inclusiveness and other elements that collectively provide a wide range of co-benefits. Further, we explore opportunities for well-coordinated multi-stakeholder and partnership approaches, such as effective multilevel governance, multilevel action, also financial mechanisms and innovation.

Summary of key findings and recommendations

The buildings and construction sector offer tremendous possibilities for accelerated climate and energy action, integrated urban planning and looking beyond the single building, with a holistic and strategic approach at the district or even city level. When translating global, national and local commitments into tangible action - and so collectively achieving the Paris Climate Agreement goals, SDGs, and other relevant Multilateral Environmental Agreements, as well as frameworks such as the Chaillot Declaration, - the onus is on the actor, the “do-er”.

At the heart of the approach is sustainable building design (also called eco-design, green buildings, etc), as well as selecting suitable materials and relevant technologies. It is critical to also address energy use and greenhouse gas emissions released during the life-cycle of the building, from resource extraction to building decommissioning. This means following a consumption-based approach, which includes understanding and reducing scope 3 emissions. Intertwined with this, a circular approach and resource efficiency is highly recommended.

To decarbonize this sector, energy is key, not only from local renewable generation but also through energy demand reduction thanks to adequate design, sustainable materials and efficient appliances. The eco-design of buildings can drastically reduce the need for energy, including embodied energy. The clean, green energy transition can be effectively combined with nexus elements, considering water, waste, nature-based approaches and so on. Innovation is called for and more holistic approaches offer opportunities for positive change and optimized co-benefits. This is about understanding options and making informed choices - we need awareness and education.

Yet, it is important to integrate the principles of sustainable and affordable housing (WorldGBC, 2023). This includes enhancing habitability and comfort by prioritizing health, dignity, and access to safe and inclusive environments; fostering community and connectivity through inclusive design, access to essential services, and culturally relevant spaces; and ensuring resilience and adaptation to climate change by designing durable, adaptable housing that incorporates nature-based solutions and withstands climate hazards. Additionally, resource efficiency and circularity must be embraced, targeting net-zero emissions, efficient energy and water use, and circular material flows, while addressing economic accessibility by ensuring affordability across purchase, operation, and living costs, and supporting local economic development. For a sound investment, all the above considerations are important.

Many enablers are needed to support fast, inclusive and effective action. This includes the vertical (between different levels of government) and horizontal (across multiple sectors) integration of policies and mechanisms that proactively guide, support and finance implementation. In a complementary way, capacity building and awareness is key to making informed decisions, with opportunities for multi-stakeholder engagement, innovative business models and the flow of blended finance. Local governments must also align investments with local needs, mobilize diverse financial resources, and utilize innovative mechanisms to pilot and upscale transformative solutions. To limit temperature rise well below 2 degrees Celsius (°C), as per the Paris Agreement, accelerated local action must embrace a just and inclusive approach, to support a resilient, near-zero and equitable future for all –using a whole-of-government to whole-of-society approach.

To accelerate climate action in the buildings and construction sector, recommendations for key stakeholders are clear and actionable.

- **National governments** should establish ambitious targets, integrate policies across levels of governance, and develop robust roadmaps to align with international commitments.
- **Subnational governments** must assess local needs, set context-specific decarbonization targets, implement integrated urban planning, and foster collaboration through vertically and horizontally aligned strategies.
- **Financial institutions** are encouraged to support subnational climate action by providing seed funding, enabling innovative financing mechanisms, and ensuring stable intergovernmental fiscal transfers.
- The **private sector** should lead innovation in sustainable building technologies, adopt whole-life carbon assessment, and drive demand for low-carbon solutions across supply chains.
- Meanwhile, **other stakeholders**, such as NGOs and development agencies can build capacity, foster partnerships, and ensure inclusive project co-design to address community-specific needs.

Each stakeholder group has a distinct role, yet their collective actions are crucial for achieving sustainable, resilient, and equitable local solutions for green buildings and construction.

Map of case studies

List of case studies

Case Study	Location	Case Study Focus	Activity Related GlobalABC Roadmap for Buildings and Constructions
Legalizing Informal Settlements	Bishkek, Kyrgyzstan	• Multilevel governance • Just transition and pro-poor planning • Integrated urban development • Capacity building	Resilience Urban planning Appliances and systems
Retrofitting health and community centers to enhance resilience	Muhanga, Rwanda	• Integrated renewable energy in buildings • Strengthened health services • Enhanced safety and resilience • Project preparation support	Appliances and systems Clean Energy Existing buildings
Support Low-Income Households in the Energy Transition	Ludwigsburg, Germany	• Multilevel action and partnership • Just transition and pro-poor planning • Clean energy transition • Residential building • Financial incentives	Clean Energy Appliances and systems Building operations
3D printing and sustainable construction materials for affordable housing	Kilifi, Kenya	• Multilevel action and partnership • Innovative technologies and sustainable materials • Affordable housing • Mortgage financing, land value	Resilience New buildings Appliances and systems Materials
Scalable Partnership Model for Sustainable Neighborhood Renovation	Tallinn, Estonia	• Large-scale renovation of apartments • Innovative partnership approach • Scaling potential	Existing buildings Clean Energy
Decarbonising municipal buildings through energy efficiency and solar energy	Dakar, Senegal	• Just transition and pro-poor planning • Local Government leadership • Energy transition	Existing buildings Clean Energy

Case Study	Location	Case Study Focus	Activity Related GlobalABC Roadmap for Buildings and Constructions
Policy Alignment from City to Province: Zero Emissions from New Buildings	Vancouver, Canada	• Multilevel governance • Bottom-up policy impact, • Vertical integration of policies • Capacity building	Building operations New buildings
A roadmap for decarbonizing the building and construction sector in India: Nagpur's Zero Carbon Buildings Action Plan	Nagpur, India	• Multilevel governance • Strategic approach • Regulatorion • Technology-specific actions across lifecycle stages	Building operations Urban planning Materials Existing buildings Appliances and systems
Local actions for national goals: Retrofitting of precast buildings	Ulaanbaatar, Mongolia	• Multilevel governance • Residential building renovation • Financial enabling factors	Existing buildings Building operations
Multilevel collaboration to promote fly-ash bricks in sustainable construction	Bihar, India	• Multilevel action • Resilience • Clean production technologies	Materials Resilience
Community Action for Energy Transition	Bosnia and Herzegovina	• Multilevel action • Energy transition	Clean Energy Resilience Existing buildings
Multilevel and multi partner strategy for a circular construction industry	Turku, Finland	• Vertical and horizontal integration • Industry • Circularity	Materials Clean Energy Building operations
Private sector collaboration and enhance scalability: advancing energy transition in public buildings	Mexico City, Mexico	• Financial enabling factors • Government leadership • Governmental buildings • Resource efficiency for energy and water	Appliances and systems Clean Energy Existing buildings

Case Study	Location	Case Study Focus	Activity Related GlobalABC Roadmap for Buildings and Constructions
Affordable Green Finance in Kenya - Guarantees as part of Finance Innovation	Kenya	• Financial enabling factors • Inclusive and climate-resilient cities • Affordable housing • Job creation	Resilience Building operations
Conserving the past, building the future: Eco-friendly restoration of the Steam Engine Brewery	Lobeč, Czech Republic	• Cultural heritage • Restoration • Private sector co-financing	Existing buildings Appliances and systems
Recycled Waste use in Construction - eco-materials for the Paris Metro Expansion	Paris, France	• Circular approaches • Sustainable infrastructure • Regulatory frameworks • Private sector involvement	Materials
Urban-LEDS Lab - piloting approaches for climate resilience and energy efficiency in public building	Recife, Brazil	• Multilevel action, • Energy transition • Capacity building	Existing buildings Clean Energy Appliances and systems
Integrated urban planning to increase resilience: Eco-efficient building design	Quito, Ecuador	• Integrated urban planning, • Urban resilience	Urban planning Building operations Appliances and systems
The Accra Metropolitan Assembly's Climate Action Plan: Pioneering Energy Efficiency	Accra, Ghana	• Metropolitan Climate Action Plan • Energy efficiency • Policy enforcement	Building operations Appliances and systems Clean Energy Existing buildings New buildings

2. Setting the scene

Key facts and figures in the buildings and construction sector

The building and construction sector is critical to global, national and local climate action

- A **building already standing or being constructed** today will s**till be in use in 2070** and beyond, but the climate it encounters will have changed significantly. Therefore, **increasing building resilience is vital** (GlobalABC, 2021a).
- Buildings are one of the five major sectors which can **collectively cut carbon emissions** to limit temperature rise to **1.5 degrees Celsius (°C)** (UNEP, 2023).
- This is a very high-emitting (greenhouse gas) sector. In 2022, it accounted for around **37% of energy and process-related CO_2 emissions** and over **34% of energy demand globally** (GlobalABC, 2024).
- Building sector policies focusing on climate change mitigation can **reduce greenhouse gas emissions by up to 90%** in developed countries **and up to 80%** in developing countries. Further, it can help lift **2.8 billion people** in developing countries **out of energy poverty** (IPCC, 2022).

…but also to the just transition promoting flourishing lives for all

- **The built environment** is a large part of most economies, accounting for **11-13% of global GDP.** Green buildings present large investment opportunities, worth an estimated **USD 24.7 trillion by 2030** in emerging market cities (IFC, 2019).
- An estimated **9-30 jobs are created for every USD 1 million invested** in retrofits and efficiency measures in new construction (GlobalABC, 2020).
- **Climate-resilient infrastructure** investments in low- and middle-income countries could produce roughly **USD 4.2 trillion in total benefits**: around USD 4 for each dollar invested (World Bank, 2021).
- It is estimated that around **80% of cities worldwide do not have affordable housing options** for the majority of their population. The world needs to provide **two billion homes** over the next 75 years — meaning **96,000 new affordable homes need to be built every day** (WorldGBC, 2023).
- **Improving housing in informal settlements can increase GDP per capita by up to 10.5%,** which means that it would completely compensate for the cost of providing housing in most countries (Sevilla Núñez, 2024).
- Providing adequate housing can add **2.4 years of average life expectancy** around the world and can **prevent as many as 738,500 deaths** annually (Sevilla Núñez, 2024).

Decarbonizing the buildings and construction sector

Illustrated by the data above, the buildings and construction sector presents significant opportunities for driving a socially just and climate-resilient transition. As urbanization rises, subnational actors have emerged as critical players in climate response efforts, being responsible for nearly 70% of climate-relevant public investment (OECD, 2022). Given the unprecedented pace of climate change, marked by severe weather patterns and climate extremes (IPCC, 2018), it is essential that local governments lead efforts to decarbonize the sector.

Buildings, throughout their life cycles, consume vast amounts of energy and natural resources, from construction through operation to demolition, contributing significantly to environmental degradation. In particular, the sector is responsible for roughly 27% of global carbon emissions from the operational phase of buildings (WRI Türkiye, 2023). A life cycle approach offers a comprehensive path to reducing emissions and mitigating the sector's environmental impact. Subnational governments play a key role in driving these changes, developing policies, and mobilizing investment to accelerate the transition to a low-carbon, resilient built environment.

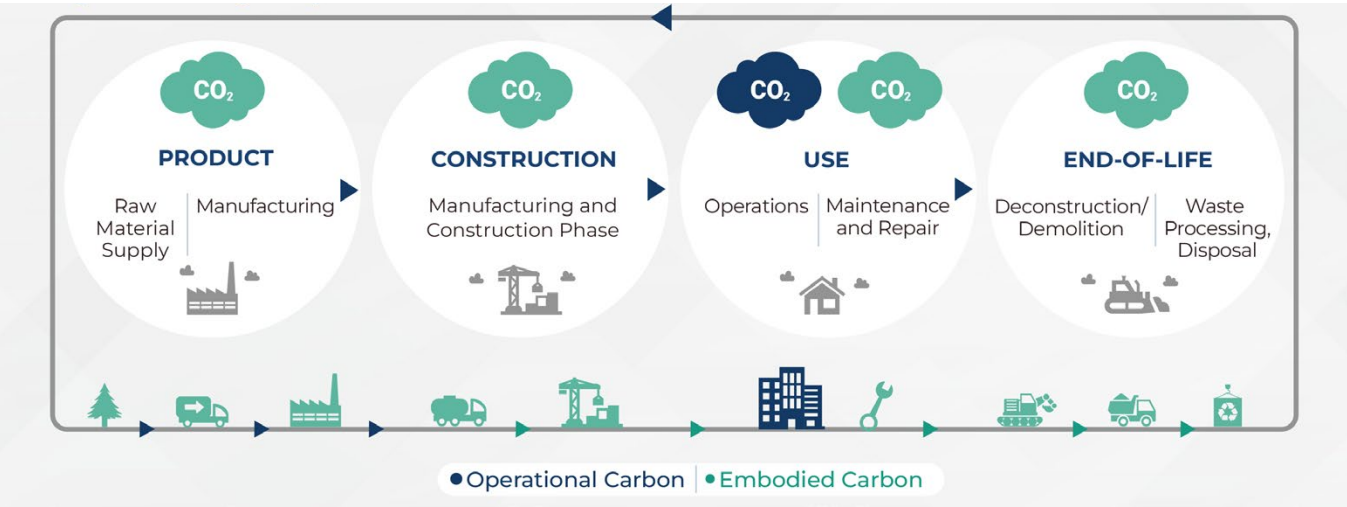


Figure 1: Building life cycle carbon emissions (WRI Türkiye, 2023)

Adopting a Sufficiency First approach is critical for addressing the root causes of overconsumption and aligning the sector with planetary boundaries (IFPEB, 2024). By prioritizing adaptive reuse, retrofitting, and optimizing existing spaces, sufficiency reduces demand for new land, materials, and energy. This principle also fosters equity by ensuring resources are allocated to meet essential needs, particularly for vulnerable populations, while promoting social stability. Governments must embed sufficiency into policies such as their NDCs, set clear resource boundaries, and lead by example to demonstrate the feasibility and benefits of sufficiency-driven actions.

Climate resilience and adaptation in the buildings and construction sector

Buildings already standing or being constructed today will still be in use in 2070 and beyond, but the climate they encounter will have changed significantly (GlobalABC, 2021). These structures contribute to climate change while also being vulnerable to its effects, including hurricanes, flooding, sea level rise, and heatwaves. As climate-related events become more frequent and severe, the world must adopt increased adaptation[1] and resilience[2] in building design and operations to reduce vulnerabilities (UNEP, 2024). This involves not only new constructions but also retrofitting existing buildings to improve their sustainability, e.g. by removing the use of fossil fuels and combustion technologies, and ability to withstand climate impacts. Adapting our built environment is crucial for the health and well-being of populations and the continuity of global economic activities (GlobalABC Adaptation Working Group, 2024).

While many regions are already taking steps toward resilience and adaptation, there is a pressing need for more coherent and ambitious efforts to effectively tackle current and future climate risks. Achieving this requires active engagement from various stakeholders, including local communities, government bodies, public and private sectors, civil society, and international organizations, coupled with knowledge management initiatives (GlobalABC Adaptation Working Group, 2024).

Building sector: relevance to NDCs and multilateral environmental agreements

Transforming the building sector is vital to meeting the Paris Agreement goals, by significantly reducing greenhouse gas emissions and enhancing resilience. Addressing this for construction and renovation in every NDC is critical for fulfilling global climate commitments and limiting temperature rise to well below 2°C.

Nationally Determined Contributions (NDCs) capture a country's post-2020 national climate change mitigation, adaptation and resilience goals and targets - in response to the Paris Agreement goals. These commitments provide significant opportunities to look into strategic goals and also sectoral targets for the buildings and construction

1 Adaptation is the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. (IPCC, 2022). This means subnational governments should ensure updated strategies and plans, informed by the latest science and addressing the local context - people and place - in collaboration with the community and private sector.

2 Resilience means the capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure (IPCC, 2022). Climate resilience requires the ability to anticipate potential climate impacts and to adapt to expected climate change, i.e. to withstand actual impacts of climate change (as far as possible), while ensuring long-term sustainability.

sector. A recent analysis of 194 countries' NDCs found that 87% (168 countries) include measures related to the built environment (PEEB, 2023, as cited in GlobalABC, 2024). While the majority of countries (80%) reference the buildings and construction sector in their 2021 NDCs, only 53% address adaptation measures for buildings, 18% set clear GHG reduction targets for the sector, and 16% specified financing requirements for at least one of these mitigation measures (PEEB, 2023).

The NDCs are currently being updated to raise the level of ambition and substance, to be released in 2025. NDCs for Buildings: Ambitious, Investable, Actionable and Inclusive (GlobalABC and PEEB, 2024) presents an adaptable menu of policies and enablers to meet countries' diverse needs in revisioning their NDCs. Covering eight policy types and 42 specific measures, this guide encourages countries to customize their NDCs with strategies suited to their unique stage—whether building foundational policies, expanding existing frameworks, or achieving net-zero and high-resilience goals.

Decarbonizing the buildings and construction sector is also essential for achieving Sustainable Development Goals (SDGs), particularly:

- **SDG 1 (No Poverty):** Reduces poverty by addressing informal settlements and providing affordable, sustainable housing solutions.
- **SDG 3 (Good Health and Well-being):** Promotes healthy lives and well-being by reducing mortality and increasing access to health care with the contribution of SDG 7.
- **SDG 5 (Gender Equality):** Advances gender equality through inclusive design, women's participation, and equitable workforce opportunities.
- **SDG 6 (Clean Water and Sanitation):** Improves water efficiency and promotes sustainable water management in building operations and infrastructure.
- **SDG 7 (Affordable and Clean Energy):** Ensures access to sustainable energy through renewable sources and efficiency measures.
- **SDG 11 (Sustainable Cities and Communities):** Promotes energy-efficient construction to create inclusive, resilient urban spaces.
- **SDG 13 (Climate Action):** Addresses the significant share of global carbon emissions from buildings, aligning with urgent climate action mandates.

Improved multilevel governance is vital in ensuring that all tiers of government have the appropriate share of roles, responsibilities, mandates, capacity and resources, to drive scaled action via updated NDCs that are in alignment with local climate action plans, and vice versa (GlobalABC Subnationals Action Group Core Messages). As 66.5% of the NDCs have moderate to strong urban content (UN-Habitat, 2024a), national governments play a leading role in strengthening national climate ambitions by improving the urban climate focus in the NDCs while subnational governments play a central role in helping countries achieve their goals, particularly related to the buildings and construction sector, and step up climate action.

3. Key areas for enhanced action

The following section outlines the key areas where enhanced action is critical to accelerating decarbonization and resilience in the buildings and construction sector. These areas have been identified through a comprehensive analysis of current trends, challenges, and opportunities in the sector, as well as through case studies that highlight successful efforts in the subnational level. The cases presented throughout the report, showcasing a regional diversity, further illustrate actionable solutions that can serve as models for replication and scaling. Additionally, the enabling factors that are essential to drive progress in these areas are outlined, providing insights into the conditions needed for successful implementation and scaling of these solutions.

Just transition principles

In the buildings and construction sector, a just transition is essential for integrating climate action with social equity, by addressing the economic, social, and environmental impacts of decarbonization actions on displaced workers, low-income populations, and marginalized communities, to ensure that no one is left behind. ICLEI's Just Transition framework for local governments (ICLEI, n.d.) outlines five critical elements: focus on planning, stakeholder inclusion, addressing economic impacts, ensuring equity, and establishing governance structures. These elements provide a comprehensive roadmap for cities to navigate the complexities of transitioning to sustainable practices while safeguarding the livelihoods and well-being of their most vulnerable populations.

Key principles for a just transition in the built environment (IHRB & ICLEI, 2023) include meaningful participation, non-discrimination and reduced socio-spatial inequalities, right to adequate housing, safeguarding construction workers' rights, and improving physical and mental health outcomes. A gender perspective enhances this approach by addressing pay gaps in the sector, promoting women's leadership in decision-making, and improving access to skills, technologies, and financing for women and marginalized groups. Local governments are uniquely positioned to ensure a green and just transition by aligning their efforts with global guidelines to address social and environmental challenges, foster equity, and build sustainable, inclusive communities.

CASE STUDY | **LUDWIGSBURG, GERMANY**

Support low-income households in the energy transition

The Ludwigsburg's KlimaBonus Program is an innovative initiative to overcome financial barriers that prevent low-income households from participating in the city's renewable energy transition. The high upfront costs of solar technology limit the involvement of such households. By introducing a grant program, a "carefree package", financial and logistical hurdles were removed. Residents could express their interest online, and those selected received support --with the local government's partners handling installation and payment directly. A direct result: participation jumped from 2 applications to 60 under this revamped scheme. The KlimaBonus Program not only reduces greenhouse gas emissions but also enhances community resilience and sets a replicable example for other cities that implement an inclusive sustainable energy transition.

This initiative is part of the INCLU:DE project implemented by ICLEI and supported by Stiftung Mercator. The focus is on integrating social equity into local climate interventions, ensuring that vulnerable communities also have access to climate solutions. As part of the project, a national policy brief was developed to provide the federal government with insights and lessons learned from the local initiatives.

Related activities

- Clean energy
- Appliances and systems
- Building operations

Further reading

Equity in Action: Shaping Local Climate Solutions for All (WRI, 2024)

INCLU:DE International collaboration and knowledge creation, Case study: Ludwigsburg (ICLEI, 2024)

Climate Equity Toolbox. A how-to guide for making municipal subsidy programs more socially just (ICLEI, 2024)

3D printing and sustainable construction materials for affordable housing

The Mvule Gardens project addresses Kenya's critical housing shortage by using 3D printing technology to quickly provide affordable homes. It is part of the Green Heart of Kenya regenerative ecosystem, a model for inclusive and climate-resilient cities. This innovative approach incorporates energy-efficient designs, effective water management, and sustainable construction materials. The project is spearheaded by 14Trees, a joint venture between Holcim and the British International Investment (BII).

The project targets: save 15.66 tonnes of CO_2 annually, 42% energy savings, and 24% water savings, significantly reducing the environmental footprint of each home by over 50%. 20% reduction in construction costs allows for affordability for people living on low incomes. It promotes a just transition by creating skilled jobs, training local workers in 3D printing technology, and establishing a local plant for material production. With ten of the 52 planned houses completed, the technology has shown potential for replication in other countries, including Malawi. It is linked to mortgage financing options through Kenyan banks to encourage home ownership.

Related activities

- Resilience
- New buildings
- Materials
- Appliances and systems

Further reading

Case Study: Mvule Gardens, World Green building Council

Inside the largest 3D-printed affordable housing project to date

The project supports the creation of highly-skilled jobs, with local workers being trained as 3D machine assistants and specialists.

Aerial view of the construction site: 3D-printing enables fast, resource-efficient and cost-effective construction.

CASE STUDY | **TALLINN, ESTONIA**

Scalable partnership model for sustainable neighborhood renovation

SOFTacademy is a transformative neighborhood renovation project in Tallinn's Mustamäe district, focusing on energy-efficient solutions for apartment buildings. It follows a novel approach to improving energy efficiency, livability, and sustainability of residential buildings by working closely with housing associations, residents, municipal governments, and private sector experts. By renovating four apartment buildings as part of its pilot project, SOFTacademy develops a scalable renovation model that reduces costs and encourages large construction companies to participate, offering higher quality at lower prices. Designed primarily for current residents, this approach includes the development of communal spaces to foster a sense of community and enhance the quality of life of the residents.

The City of Tallinn plays a key role in the project, having secured €5 million from the European Urban Initiative, aligning with the European Green Deal's Renovation Wave Strategy and the New European Bauhaus initiative. The collaborative model, involving local, municipal, and state-level stakeholders, provides a scalable solution for other neighborhoods in Estonia and beyond, contributing to climate goals and reducing energy consumption in line with the EU's 2050 climate neutrality targets.

Related activities

- Clean energy
- Existing buildings

Further reading

Tackling the Technical and Societal Challenges of Modernist Neighbourhoods in Tallinn, Estonia (European Urban Initiative, 2024)

TalTech drawing for renovated apartment buildings in Mustamäe

Energy use in buildings

Buildings must be part of decarbonization efforts. Since 2010, the total global area of constructed buildings has increased by over 31%, with nearly 80% of this growth attributed to residential buildings (IEA, 2023). Transitioning to zero-carbon built environments requires innovative strategies, such as updated building energy codes, integration of renewable energy, and the use of sustainable materials to mitigate greenhouse gas emissions and enhance climate resilience.

Modern building energy codes are essential for mandating high-performance standards that improve energy efficiency. However, over 30% of these codes, which typically apply only to new buildings, have not been updated since 2015 (GlobalABC, 2023), highlighting the need for urgent action to boost energy efficiency across nations. Additionally, managing energy demand is vital to address rising energy consumption and ensure resilience against climate impacts. Since 2000, the number of residential cooling units has tripled, contributing to an average annual increase of 4% in energy demand for space cooling. Meanwhile, space and water heating accounted for nearly half of energy demand in buildings in 2022 (IEA, 2023). Retrofitting and adopting passive design strategies, as well as integrating renewable energy solutions, is vital to address rising energy consumption and ensure resilience against climate impacts (GlobalABC, 2023).

CASE STUDY | **DAKAR, SENGAL**

Decarbonizing municipal buildings through energy efficiency and solar energy

The City of Dakar is undertaking an ambitious project to decarbonize municipal buildings by enhancing energy efficiency and implementing solar energy solutions across 23 public complexes, including health centers and schools. In collaboration with the C40 Cities Finance Facility, this initiative aims to significantly reduce greenhouse gas emissions and lower energy costs, addressing the city's reliance on fossil fuels, which comprise 86% of Senegal's energy mix. The project involves three phases: installing solar panels, optimizing energy efficiency measures, and implementing battery storage systems, with an expected reduction of approximately 390 tons of CO_2 emissions annually. The approach also presents opportunities for job creation in the construction and maintenance of these technologies, contributing to a just energy transition. With the potential to replicate similar initiatives across 350 additional city-owned buildings, this project sets a strong example for cities in Senegal and West Africa striving for sustainable energy solutions.

Dakar, Senegal aerial view

Related activities

- Clean energy
- Existing buildings

Further reading

Decarbonizing municipal buildings through energy efficiency and solar energy (C40 CFF, 2019)

CASE STUDY | **ACCRA, GHANA**

The Accra Metropolitan Assembly's Climate Action Plan: Pioneering energy efficiency

The Accra Metropolitan Assembly (AMA), as a part of C40's Deadline 2020 programme, has developed a Climate Action Plan (CAP) to reduce greenhouse gas emissions by prioritizing energy, buildings, and industry. Key actions include making electricity more affordable, streamlining the building permitting process for both new and retrofitted structures, and promoting the use of energy-efficient appliances across various sectors. Although the decarbonization of Ghana's electricity grid falls outside its jurisdiction, AMA is actively integrating green building practices into government and private projects. This includes enforcing the Ghana Building Code of 2018, establishing a working group for the Green Buildings Programme, implementing retrofitting bylaws for old buildings, and developing innovative financing mechanisms to encourage energy efficiency.

The Government of Ghana has committed to building resilience to the impacts of climate change through adaptation goals in the NDC, National Climate Change Policy and the National Climate Change Adaptation Strategy. Accra's climate action plan is the first sub-national climate plan developed in Ghana, downscaling national climate change targets and ambitions to the level of a Metropolitan Assembly.

Related activities

- Clean energy
- Existing buildings
- Building operations
- Appliances and systems
- New buildings

Urban-LEDS Lab: Piloting approaches for climate resilience and energy efficiency in public buildings

Recife has been recognized as one of the most climate-vulnerable cities in Latin America (IPCC, 2007). The city is particularly vulnerable to flooding and landslides associated with storms, and, as a coastal city, it also stands out for its exposure to risks related to rising sea levels, which affects urban infrastructure, sanitation and the most vulnerable populations (CAF, Way Carbon and ICLEI, 2019). Around 81% of urban buildings are less than 30 meters from the coastline and located on land below 5 meters in height, requiring urgent adaptation measures. Recife has focused on addressing climate change by developing a robust climate governance framework, including the creation of the Local Climate Action Plan and a zero-carbon target for 2050. Along with the Urban Leds II project, this pilot implemented solar energy and energy-efficient solutions, such as LED lighting, at Recife Women's Hospital and other public facilities. It successfully reduced energy consumption and greenhouse gas emissions, serving as a replicable model for public buildings across Brazil. The Urban-LEDS II initiative in Recife aimed to enhance the city's capacity to develop financeable climate action projects. In addition to tangible emissions reductions, the initiative developed a guide for municipalities to prepare financeable climate projects and mapped potential funders.

Urban-LEDS II, funded by the European Union and jointly implemented by ICLEI and UN-Habitat, helps local governments implement integrated low-emission and climate-resilient development, addressing both mitigation and adaptation concerns. As part of the capacity building activities, a workshop was organized in Jakarta, Indonesia to assist local government technical staff and officials in conducting GHG emissions inventories using Indonesia's National GHG Inventory System.

Related activities

- Clean energy
- Existing buildings
- Appliances and systems

Further reading

Recife Greenhouse Gas Emission Reduction Plan (2016)

Local Climate Action Plan Of The City Of Recife (2020)

Empowering Local Actors To Develop Projects That Can Be Financed By Climate Action: Belo Horizonte and Recife, Brazil (ICLEI, 2021)

Inauguration of the LEDS Lab in Recife

Photovoltaic solar plant at the Dr. Mercês Pontes Cunha Women's Hospital in Recife (HMR) ©Rodolfo Loepert, PCR

Circularity approaches in buildings and construction

The buildings and construction sector is at a pivotal crossroads, where adopting circularity approaches can significantly mitigate its environmental impact. With global demand for raw materials expected to nearly double by 2060 due to economic growth and rising living standards, addressing these pressures is critical for sustainable urban development (OECD, 2019). Solutions to reduce the demand for carbon-intensive materials and embodied emissions[3] include shifting to local and sustainably sourced bio-based materials, using low-carbon versions of high-emitting materials, and hybrid approaches to materials choices (C40 Cities, 2023). Tailoring building codes with consideration of vernacular materials and techniques is also needed to encourage the shift to circularity approaches.

According to the International Resource Panel implementing material efficiency strategies can substantially reduce emissions in the built environment. For instance, in G7 countries, these strategies could cut GHGs from the material life cycle of residential buildings by over 80% by 2050 (IRP, 2020). To support such transformative efforts, the 10 Whole Life Cycle Recommendations for the Buildings Breakthrough (GlobalABC Materials Hub, 2024) aim to guide policymakers in implementing Whole Life Cycle (WLC) approaches globally. These recommendations emphasize integrating circular economy principles and sufficiency into policy frameworks, advancing near-zero emission and resilient buildings to meet the objectives of the Buildings Breakthrough initiative. Complementing this, the avoid+shift+transform framework further supports circularity by advocating for reducing material demand through better design and reuse (avoid), transitioning to regenerative, bio-based materials (shift), and decarbonizing conventional materials like concrete and steel (transform). Together, these strategies can drive sustainable, low-carbon construction practices, fostering circularity and resilience in the built environment (UNEP and Yale Center for Ecosystems + Architecture, 2023). In addition, the Circular City Actions Framework promotes sustainability in buildings through five strategies: Rethink, Regenerate, Reduce, Reuse, and Recover. These strategies encourage the (re)use of low-carbon materials, minimize resource consumption, and extend building lifespans with reduced emissions, fostering more circular and resilient construction practices (ICLEI et al., 2021).

3 Emissions related to the extraction of raw materials, their manufacturing, assembly during construction, any maintenance or replacements, the disassembly and demolition, and any associated transport, waste, and end of life impacts. C40 Clean Construction Accelerator Technical Note. (2022). Available at: https://www.c40.org/wp-content/uploads/2023/10/C40-CCATechnical-Note.pdf

Being "waste-wise" - a circular economy approach to waste from buildings and construction

The Circular Construction & Housing in Sub-Saharan Africa (CiCoSA) project by UN-Habitat looks at the "waste-wise" approach to sustainable building and construction (SBC) in Sub-Saharan Africa. It is funded by the German Federal Ministry for Economic Cooperation and Development and aims to strengthen the sustainable building and construction sector by applying circular economy and low-carbon principles to the housing value chain, improving access to affordable housing and reducing the ecological footprint of cities in Sub-Saharan Africa. Thus, the project directly contributes to the shift towards a green economy, which is resource-efficient, socially inclusive, and low in carbon emissions.

The CiCoSA project released an Action Toolkit consisting of the CiCoSA Handbook and Implementation Guide with a focus on Kenya and Namibia. The handbook examines the benefits and risks of circular economy approaches in the SBC sector from a waste management perspective, offering scalable practical case studies in the region. The Implementation Guide serves as a roadmap for policymakers in Sub-Saharan Africa to navigate challenges on circular construction, emphasizing community empowerment and cross-sector collaboration. It outlines the various stages of a circular construction life cycle, from product manufacture and design to construction, operation, and ultimately, building deconstruction.

CASE STUDY | **PARIS, FRANCE**

Recycled waste use in construction: Eco-materials for the Paris metro expansion

Up to 99% of waste reuse after tunneling, deconstructing buildings and rebuilding, is the focus of this major expansion of the Paris metro system. It includes digging 200 km of tunnels, constructing 68 metro stations, and developing 1 million square meters of real estate. The Société du Grand Paris (SGP) leads this ambitious project. It will generate 52 million tons of excavated earth, normally considered as waste. To address the waste challenge, Neo-Eco developed 80 different eco-materials that can be created from the excavated earth of various lithologies. The use of these innovative eco-materials has been incorporated into the project's contract and tender specifications, thereby allowing construction companies to recycle up to 99% of the project's excavated materials and deconstruction waste.

A key achievement involves the calcination of significant amounts of clay, which is combined with traditional hydraulic binders to produce standard cement. This calcined clay emits 90% less CO_2 compared to conventional cement. By using this sustainable technique, SGP not only significantly reduces the costs of disposing of waste clay in landfills, but lowers expenses for building materials - creating a true circular economy loop. Additionally, SGP and Neo-Eco are collaborating on the deconstruction of buildings located on sites designated for new metro stations, achieving up to 98% recycling of materials from these structures.

Such innovative practices are not only feasible in developed EU markets; the rising costs of cement and logistics in many emerging markets also indicate that this approach is globally viable. The project's design is highly replicable, provided that similar regulatory and logistical frameworks are in place.

Related activities

Materials

Further reading

Neo-Eco launches low carbon clay binder

Grand Paris Express & Circular Economy: SGP publishes the Framework Plan for its approach

Planning for climate adaptation and urban resilience

Inclusive and equitable planning goes hand in hand with urban resilience. In many fast-growing cities, low-income populations settle in the most hazard-prone areas (C40 Cities, 2023). Informal settlement upgrading by embedding technological opportunities to create affordable and accessible housing solutions and improve the quality of life is crucial to ensure that these communities can thrive while minimizing risks related to displacement and environmental vulnerability. To build the resilience of marginalized communities while pursuing a just transition, creating links to localized energy, waste and sewerage management, work creation (Isandla Institute, 2024), and a hybrid approach combining gray and green-blue infrastructure during the initial planning phases (C40 Cities, 2023) should be considered.

CASE STUDY | **BISHKEK, KYRGYZSTAN**

Legalizing informal settlements

In Bishkek informal settlements house 18-25% of the city's population. These often lack basic services such as water, electricity, healthcare, and transportation infrastructure. They also present significant challenges to urban development and the resilience of their vulnerable population. By legalizing and improving informal settlements, equitable urban growth and enhanced living conditions can be realized. The United Nations Economic Commission for Europe (UNECE), in collaboration with the Bishkek local government and the Cities Development Initiative for Asia (CDIA), launched a project to legalize and upgrade these informal settlements. Starting with comprehensive assessments of these areas, plans were developed for infrastructure improvement, and legalizing land tenure to provide security and encourage investment in property development.

The project demonstrates the critical role of integrated urban development strategies in transforming informal settlements into resilient, inclusive communities. It also led to improved living conditions and greater social inclusion, as well as investments in property improvements. The approach combined community engagement, an integrated approach (legal, social, and infrastructural interventions), and capacity building for national and local governments.

Related activities

- Resilience
- Urban Planning
- Appliances and systems

Further reading

Guidelines for the formalization of informal constructions (UNECE, 2019)

UNECE helps Bishkek, Kyrgyzstan, with informal settlements and urban resilience (UNECE, 2022)

Post COVID-19 Recovery for Informal Settlements in the UNECE Region: City of Bishkek Kyrgyzstan Assessment Report (UNECE, 2021)

CASE STUDY | **MUHANGA, RWANDA**

Retrofitting health and community centers to enhance resilience

In the Muhanga District, healthcare and community centres often heat water on open fires - a safety hazard. The District Government piloted a retrofit project to integrate solar water heaters, solar photovoltaic PV panels for electricity, rainwater harvesting and water purification systems in these buildings. The aim is to expand this approach to all 17 healthcare centres and 12 sector offices in the district, ensuring uninterrupted service delivery for the community.

The project supports Rwanda's National Strategy for Climate Change and Low Carbon Development and its NDC goal (16% emissions reduction by 2030). By replacing traditional energy sources with locally generated renewables, emissions are reduced, resilience and safety are enhanced, and access to critical services is improved. This particularly benefits women who are reliant on maternity care, and make up more than half of the population. The project also helps to raise awareness about renewable energy and water conservation. With project preparation support from ICLEI, the potential transformative impact project - as part of the TAP project portfolio - was improved by strengthening the community benefits and seeking investment to expand this pilot project. This is a replicable model for other districts and sectors in Rwanda.

Related activities

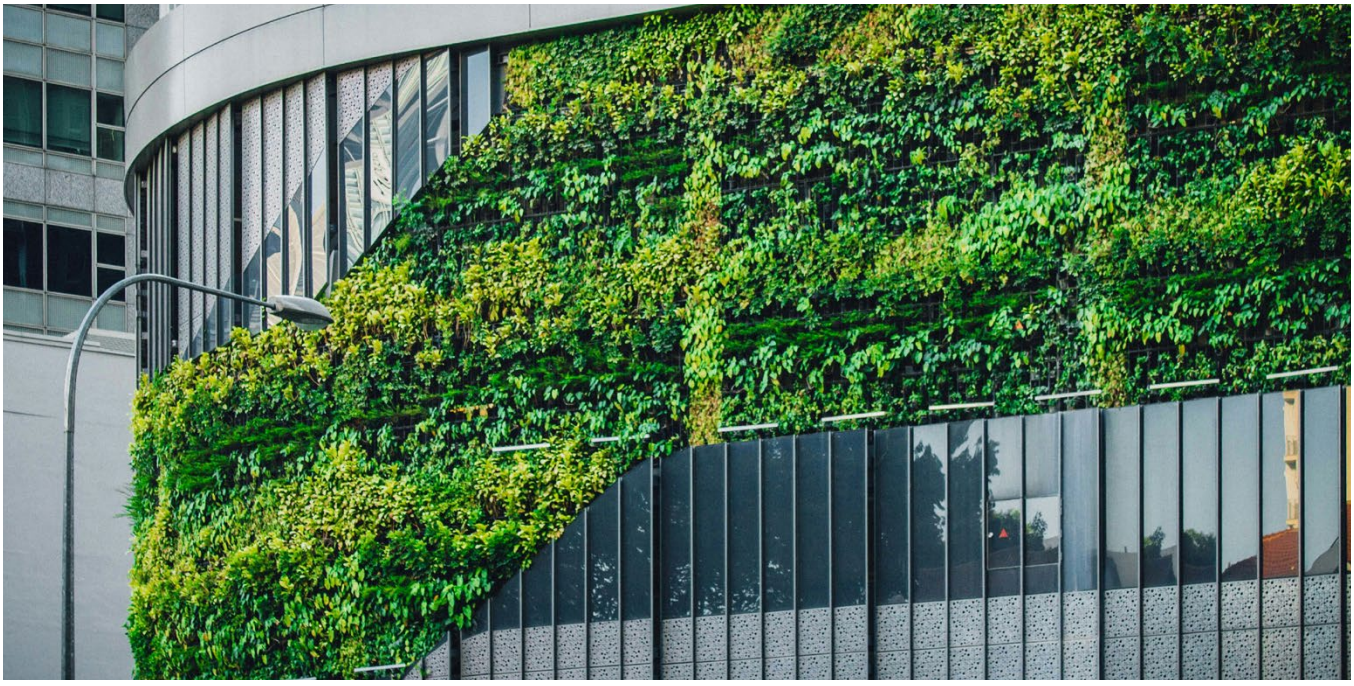
- Existing buildings
- Clean energy
- Appliances and systems

Further reading

How Rwanda is making its cities resilient and providing its people with secure, healthy futures (Urban LEDS, 2022)

Rwanda's updated NDC

Transformative Actions Program (TAP)



Enabling factors

Multilevel governance (MLG) refers to the system of continuous negotiation and coordination among different levels of government -national, regional, and local. This system involves various forms of coordination and negotiation, including policy alignment, resource sharing, joint decision-making, information exchange, and conflict resolution. The primary objectives of multilevel governance are to enhance policy coherence, promote sustainable development, improve public services, foster inclusive participation, and achieve common goals such as climate action, economic development, and social equity by leveraging the strengths and resources of all involved parties (UN-Habitat, 2023a; UN-Habitat, 2021; UN-Habitat, 2023b).

CASE STUDY | ULAANBAATAR, MONGOLIA

Local actions for national goals: Retrofitting of precast buildings

The Thermo-technical Rehabilitation of Precast Panel Buildings initiative in Ulaanbaatar, Mongolia, aims to achieve a 22.7% reduction in greenhouse gas emissions by 2030 as outlined in the country's updated Nationally Determined Contributions (NDC), submitted in 2020. The Municipality of Ulaanbaatar has launched a retrofitting program targeting 1,077 ageing precast buildings, focusing on enhancing energy efficiency through the installation of external insulation, upgrading windows and doors, and modernizing heating systems. The project is led by the Ulaanbaatar City Government in collaboration with the Ministry of Environment and Tourism, the ICLEI East Asia Secretariat, and the Global Green Growth Institute (GGGI), ensuring alignment with national climate goals and securing the necessary funding, including a EUR 2.3 million allocation for insulation upgrades. Preliminary results show energy savings of 21% to 27% from 16 retrofitted buildings, with expectations to reduce heat loss by 31% by 2030. The initiative not only supports Mongolia's climate commitments but also enhances indoor comfort and resilience against extreme weather, providing a model for similar retrofitting programs in other cities facing comparable challenges.

Related activities

- Existing buildings
- Building operations

Further reading

Mongolia: Energy Performance Building Retrofitting (Mitigation Action Facility)

Building Energy Efficiency and Thermal Retrofitting, Ulaanbaatar, Mongolia (ICLEI, 2022)

CASE STUDY | VANCOUVER, CANADA

Policy alignment from city to province: Zero emissions from new buildings

Vancouver's Zero Emissions Building Plan (ZEBP) is a key component of the city's Renewable City Strategy, which aims for 100% renewable energy by 2050. The city has introduced stringent building codes to reduce emissions from new buildings, with a target to cut emissions by 50% in buildings under seven stories. The plan focuses on zero-emission buildings (ZEBs) and aims to reduce operational emissions to zero for all new constructions by 2030. The ZEBP includes four key strategies: setting progressive greenhouse gas (GHG) and thermal energy limits, leading by example with city-led projects, catalyzing innovation through incentives, and building capacity in the construction sector. The plan is supported by a variety of stakeholders, including the city, industry leaders, and local organizations, who collaborate to overcome barriers and drive innovation in building practices.

The ZEBP is aligned with Canada's Paris Agreement commitments and aims for significant GHG reductions by 2030, with early estimates suggesting up to 86% reductions in carbon pollution compared to previous standards. The plan incorporates innovative financial mechanisms, such as private sector incentives and financing tools for energy efficiency upgrades, to promote sustainable construction. It also fosters knowledge sharing through a Centre of Excellence and collaborations with industry organizations. Key lessons from the initiative include the importance of transparent regulation, the need for tools to support market transformation, and the role of incentives in accelerating the adoption of zero-emission buildings. The plan's success in Vancouver positions it as a potential model for other cities, provided there is sufficient funding, technical expertise, and community involvement to replicate the approach.

Related activities

- Buildings operations
- New buildings

Further reading

City of Vancouver, Zero Emissions Building Plan (2016)

Vancouver's Zero Emissions Buildings Plan [video] (Building Transformations, 2018)

Zero Emission Buildings in Vancouver and Toronto: Requirements & Timelines (Arbor, 2024)

Cities100: 100 Solutions for climate action in cities (Sustainia, 2017)

Multilevel action (MLA) points to the collective efforts of various stakeholders—including governments, businesses, civil society, and communities— working together toward shared goals. For decarbonization in the building and construction sector, this means combining the strengths and resources of local, regional, and national governments to drive coordinated action. MLA ensures that climate efforts are scaled up across regions, making use of each level's specific capabilities.

CASE STUDY | BIHAR, INDIA

Multilevel collaboration to promote fly-ash bricks in sustainable construction

The Bihar government, recognizing the environmental impacts of burnt clay brick manufacturing, which produced 16 million tonnes of CO_2 and consumed 53 million tonnes of topsoil in 2017-18, has implemented policies to promote the use of fly ash bricks, a cleaner alternative that utilizes waste from thermal power plants. The transition is supported by key stakeholders, including the Ministry of Environment, Forest and Climate Change (MoEFCC), which mandated thermal power plants to supply 20% of fly ash-based building material enterprises, and various local government departments collaborating through an Interdepartmental Task Force on cleaner production. Through the collaborative efforts of Development Alternatives (DA) and Shakti Sustainable Energy Foundation (SSEF), the state has developed a Fly Ash Brick Quality Rating System (FABQRS) and initiated capacity-building programs for brick manufacturers.

At the state level, the Bihar Government has been instrumental in devising policies to mandate fly ash bricks in the construction of public buildings and ban the production of burnt clay bricks. The policy changes have led to a substantial increase in fly ash utilization -from 32% to 43% in a year- with the potential to create approximately 1,500 green jobs. Moreover, due to their lightweight and strong properties, the adoption of fly ash bricks enhances disaster resilience in seismic zones. With a replication potential across other Indian states with underutilized fly ash, the initiative highlights the importance of multilevel collaboration and the role of various stakeholders in advancing sustainable construction practices.

Related activities

- Resilience
- Materials

Further reading

Toolkit for Facilitating Fly Ash Brick Enterprises in Bihar (Development Alternatives)

A Cluster Approach To Sustaining Fly Ash Brick Enterprises In Bihar (Development Alternatives)

Using Resource Efficient Materials in Brick Kilns – Bihar (Shakti Foundation, 2020)

The Fly Ash Brick Industry in Bihar, A Status Report (Shakti Foundation, 2019)

Stakeholder consultations at a fly-ash brick unit

CASE STUDY | **BOSNIA & HERZEGOVINA**

Community action for energy transition

The Community Action for Energy Transition project in Bosnia and Herzegovina aims to address the country's heavy reliance on lignite coal for energy, which significantly contributes to greenhouse gas emissions and poor air quality. Commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and executed by the Ministry of Foreign Trade and Economic Relations (MoFTER), the project empowers local governments and the private sector to drive the energy transition through sustainable practices. With a budget of €3 million, the project focuses on three components: (1) develop the necessary instruments in municipalities to encourage the energy-efficient renovation of apartment buildings, (2) establish energy communities by overcoming existing barriers and encouraging the sharing of experience, (3) collect data from private building renovation projects and use it to develop the strategy of public stakeholders. The approach involves collaboration among various stakeholders, ensuring a multilevel action framework that can be replicated in other regions, ultimately promoting a just transition by engaging local communities and enhancing energy efficiency.

Related activities

- Resilience
- Clean energy
- Existing buildings

Further reading

Community Action for Energy Transition (GIZ, 2023)

Multi-Level Governance Atlas - Enhancing climate action through examples of multi-level partnerships from around the world

The Multi-Level Governance Atlas, produced by WRI in partnership with the Global Covenant of Mayors for Climate and Energy and supported by Bloomberg Philanthropies, showcases over 100 examples of multi-level governance from 52 countries. These examples are categorized by enabling conditions and linked to further resources, illustrating key lessons for advancing climate action. The Atlas emphasizes the importance of aligning national and subnational policies, formalizing collaboration mechanisms across government levels, and leveraging diverse coalitions of civil society, business, and academia to transform local financing and action (GCoM, 2023). Despite varied contexts, the Atlas showcases the potential of multi-level governance to accelerate progress toward a resilient and net-zero future.

Vertical integration describes structured mechanisms and arrangements for the alignment and coordination of sustainable development strategies and policies across government levels (UN-Habitat, 2023b). While local governments have opportunities to influence national dialogues, they often lack systematic engagement in policy debates. Only 28% of the 70 countries that reported to the High-Level Political Forum between 2016 and 2021 engaged LRGs in national coordination mechanisms, with 21% experiencing weak engagement and 44% having no engagement at all (UCLG, 2022). Moving forward, it is essential to establish comprehensive engagement strategies that facilitate meaningful participation of LRGs at all levels, hence enhancing the overall effectiveness of decarbonization efforts in the buildings & construction sector.

Horizontal integration refers to structured mechanisms to enable inter-linkages across policy sectors and domains (UN-Habitat, 2023b). This approach is crucial for local governments as they navigate the complex landscape of decarbonization in the building and construction sector. Enhanced horizontal coordination is essential given the fragmented and siloed nature of the global buildings sector, with a wide range of actors ranging from private sector entities in manufacturing and construction, real estate, and finance, to end users and occupiers, who have crucial roles across the value chain (IEA et al.2023).

By fostering collaboration across various sectors local governments can implement more cohesive and effective strategies to reduce greenhouse gas emissions. Moreover, local governments can benefit from partnerships with private sector actors, civil society, and community organizations to create comprehensive solutions that address multiple dimensions of sustainability. Sustainable public procurement (SPP) is a key enabler in this process, with principles that emphasize embedding circularity, whole life cycle assessments, and resilience throughout

procurement cycles. The global 'Framework for Action' provides a set of high-level clear principles that are common to all stakeholders, and a number of actionable strategies and tools that can be adopted and utilized for the implementation of the common principles according to different contexts (One Planet Network, 2024). By leveraging horizontal integration and SPP principles, local governments not only enhance their capacity for impactful decarbonization efforts but also contribute to broader climate goals at regional and national levels.

CASE STUDY | TURKU, FINLAND

Multilevel and multi-partner strategy for a circular construction industry

The City of Turku, Finland, aims to achieve the ambitious goal of carbon neutrality by 2029. Linked to this, is the decrease of life cycle impacts of buildings and infrastructure. Turku employs a multilevel governance strategy to align city initiatives with national climate policies and is implementing various projects –using a partnership approach. To this end, the city adopted a circular economy approach that emphasizes sustainable energy production and resource-efficient construction practices --so integrating renewable energy sources and using recycled materials. This is implemented in partnership with the national government and the regional level, as well as local businesses, and energy producers. The project is financed through public investments and EU grants, contributing to Finland's, a CHAMP endorsing country, Nationally Determined Contribution (NDC).

To date, Turku has successfully reduced its carbon footprint, achieving a 58% reduction in GHGs since 1990, while enhancing resilience to climate impacts. This approach serves as a replicable model for other cities, with essential preconditions including strong political commitment, access to diverse finance, a strong partnership, and effective multi level action, i.e. cooperation across different tiers of government.

Related activities

- Clean energy
- Building operations
- Materials

Further reading

Policy Brief: Transforming Europe's building stock for a fair, affordable, climate-neutral future (ICLEI, 2024)

Strategic and policy frameworks are essential in enabling and driving decarbonization in the buildings and construction sector. They provide a clear direction for both the public and private sectors, guiding the implementation of near-zero, energy-efficient building practices - ideally through well-coordinated policies at all levels of governance. However, supporting regulatory frameworks for net-zero buildings are often either missing, inadequate, unclear, or conflicting (Climate Policy Initiative, 2023). As highlighted previously, vertical and horizontal integration is necessary to facilitate comprehensive strategic and policy frameworks. Grounding and updating national plans and goals with regional and local contributions to climate and sustainability; utilizing existing committees as dedicated governance mechanisms and establishing dedicated coordination groups to align policy and implementation across levels are essential to convert climate and sustainability ambition into implementation (GCoM, 2023).

CASE STUDY | QUITO, ECUADOR

Integrated urban planning to increase resilience: Eco-efficient building design

Quito´s urban sprawl poses fundamental challenges from an ecological and economic perspective, but reversing this trend also provides a unique opportunity to plan, develop, build and manage a city that is simultaneously more ecologically and economically sustainable and more resilient. The Municipality of the Metropolitan District of Quito has developed the Eco-Efficiency tool to achieve a dense, compact and diverse city by allowing for an increase in buildability within the influence zones of public transportation. For this purpose, projects are assessed based on the integration of efficiency concepts in water consumption, energy, and landscape, environmental, and technological contributions. Nature-based Solutions (NbS) are strongly integrated in achieving permeable areas, rainwater capture and reuse through green infrastructure, and vegetated façades for thermal comfort, contributing to environmental protection and the construction of urban resilience for the city of Quito.

In 6 years, 16 buildings were approved with increased buildability, averaging 5 floors, representing approximately 1,000 housing units, and generating approximately 3.5 million dollars through the purchase of permits for increased buildability within walking distance of high-capacity public transport. Through the buildings with applied parameters in the Eco-Efficiency tool, approximately 371,047 liters of rainwater were temporarily retained, avoiding flooding in the most impermeable areas of the city; and the emission of 23,579 tons of CO_2eq was avoided.

Related activities

- Urban planning
- Building operations
- Appliances and systems

Further reading

Eco-efficiency tool, Ecuador (Urban Housing Practitioners Hub)

Quito's eco-efficient tool (Urban Governance Atlas, 2023)

The Recent Legislation for Eco-efficient Design in Quito, Ecuador: A Review and Case Study (Davis, Jacome Polit & Barros, 2019)

CASE STUDY | LOBEČ, CZECH REPUBLIC

Conserving the past, building the future: Eco-friendly restoration of the Steam Engine Brewery

The restoration of the brewery and malt house into a Steam Engine Brewery in Lobeč, Czech Republic, exemplifies a successful project in the conservation and adaptive reuse of industrial heritage, with a strong emphasis on environmental responsibility. The brewery utilizes a combination of heat pumps and geothermal energy systems for heating, reducing its environmental impact and reliance on fossil fuels.

The heritage renovation project was mostly financed by the owners, with some support from national and regional programmes (e.g. Programme for the Care of Village Conservation Reserves of the Czech Ministry of Culture and the Central Bohemian Region's Programme of Culture) and the European Union's Rural Development Programme. The restoration has revitalized community dynamics, drawing in new families and fostering a sense of local pride. Additionally, the brewery's recognition as part of the European Route of Industrial Heritage enhances its significance and visibility in the realm of sustainable heritage conservation.

Related activities

- Appliances and systems
- Existing buildings

Further reading

European Heritage Europa Nostra Awards - Steam Engine Brewery (2023)

CASE STUDY | **NAGPUR, INDIA**

A roadmap for decarbonizing the building and construction sector in India: Nagpur's Zero Carbon Buildings Action Plan

Nagpur, India, has pioneered the development of the Zero Carbon Buildings Action Plan (ZCBAP), a first-of-its-kind city-led roadmap for an Indian city for decarbonizing the building sector. Completed in 2023, the ZCBAP outlines strategies to achieve net-zero buildings by 2050, addressing the city's residential, commercial, institutional, and municipal buildings, which accounted for over half of Nagpur's greenhouse gas emissions. The plan includes 28 interventions focusing on policy, regulation, materials, and technology across the building lifecycle, from pre-construction to end-of-life. The plan also emphasizes capacity building and financial support to ensure successful implementation. Key stakeholders, including the Nagpur Municipal Corporation (NMC), the Nagpur Smart and Sustainable City Development Corporation (NSSCDCL), technical partners like ICLEI South Asia and World Resources Institute (WRI), and funding agencies such as UNEP and GEF, play a central role in the plan's execution.

The ZCBAP aligns with India's climate commitments, including its updated Nationally Determined Contributions (NDCs), aiming for a 45% reduction in GHG emissions intensity by 2030 and net-zero emissions by 2070. The plan incorporates national policies like the Energy Conservation Building Code, the National Building Code, Maharashtra State development regulations, and green building guidelines, among others to guide local action. By integrating co-benefits such as health, climate resilience, and resource efficiency, the plan fosters a holistic approach to urban sustainability. Nagpur's leadership and collaborative efforts with international partners have positioned the city as a model for other Indian cities, with replication potential for similar net-zero building initiatives across India.

Together with Nagpur, many subnational governments have committed to decarbonising the built environment by joining WRI's Zero Carbon Building Accelerator programme (ZCBA), including Laikipia County in Kenya; Belén, Curridabat, Moravia and Santa Ana in Costa Rica; Konya and Gaziantep in Turkey and Bogotá and Calí in Colombia.

Related activities

- Building operations
- Urban planning
- Materials
- Existing buildings
- Appliances and systems

Further reading

Climate Resilient City Action Plan Nagpur (2021)

Nagpur 1st to launch zero carbon plan for buildings (Times of India, 2024)

Building Efficiency Accelerator (BEA) Program

Cities and local governments accelerating zero carbon buildings (WRI, 2022)

Nagpur, India skyline

The transition to net-zero buildings is a complex process that requires strategic use of both policy and financial instruments (GlobalABC, 2024). **Financial enabling factors** are critical in facilitating the decarbonization of the buildings and construction sector, particularly through targeted investments, innovative financing mechanisms, and the strategic allocation of public and private funds. Local governments can create financial incentives for building owners and developers to transition towards near-zero solutions, such as innovative financial models like carbon pricing and carbon credits. Such policies not only help internalize the environmental costs of greenhouse gas emissions but also generate revenue that can be reinvested into local decarbonization initiatives and energy efficiency programs (Chang et al., 2024). Private sector involvement is essential, as private capital has the potential to scale up investment in sustainable building solutions. Public-Private-People Partnerships (PPPPs) can bridge gaps in funding in areas like green technologies, energy-efficient materials, and circular construction practices.

CASE STUDY | KENYA

Affordable green finance in Kenya: Guarantees as part of finance innovation

An innovative approach to incentivizing local lenders to finance the construction of affordable green homes and the purchase of those homes by households with low and informal incomes - a pilot by Reall.

Reall's Green Affordable Finance initiative piloting in Kenya addresses the urgent need for climate-smart, affordable housing in a context where many live in substandard conditions and face significant financing challenges. By providing construction and mortgage loan guarantees along with targeted enabling interventions, the initiative fosters a self-sustaining housing finance ecosystem. It engages local stakeholders, employing financial mechanisms such as grants and concessional debt to mobilize approximately €34 million (USD 37 million) during its pilot phase, with the potential to support over €370 million (USD 400 million) in local private loans over 15 years.

This model shows strong replication potential across Africa and Asia and can help reduce greenhouse gas emissions, enhance resilience against climate-related disasters, and promote a just transition for affordable housing in marginalized communities.

Related activities

- Resilience
- Building operations

Further reading

Green, affordable housing finance, Reall

Green, affordable housing finance, The Lab

CASE STUDY | MEXICO CITY, MEXICO

Private sector collaboration and enhanced scalability: Advancing energy transition in public buildings

The "Advancing Energy Transition in Public Buildings" project in Mexico City aims to reduce greenhouse gas emissions by 35% by 2030, focusing on the energy efficiency of public buildings, which are significant contributors to emissions. The initiative targets 19 hospitals, implementing solar water heating and boiler replacements to achieve over 15,000 tons of CO_2 reductions as part of its Climate Action Plan. Each hospital is expected to save around $8,500 annually, with more than 3,100 public buildings identified for upgrades. The project was deemed transformative by ICLEI's Transformative Actions Program (TAP) and connected with the project preparation facility, FELICITY, for further technical assistance.

The Mexico City Federal District leads this effort with support from various state ministries, demonstrating effective multilevel governance, and the Financing Energy for Low-carbon Investment—Cities Advisory Facility (FELICITY), an initiative by GIZ and the European Investment Bank (EIB). Ongoing partnerships with entities like the Inter-American Development Bank aim to foster private sector collaboration and enhance scalability. Moreover, the experiences gained from this initiative are being shared at the national level to inform policies on energy efficiency and renewable energy.

Related activities

- Appliances and systems
- Clean energy

Further reading

Cities100: Mexico City Hospitals Lead the Way in Energy Transition (C40, 2017)

Mexico City Hospitals Lead the Way in Energy Transition (Global Opportunity Explorer, 2018)

Advancing Energy Transitions in Public Buildings Across Mexico City (FELICITY, 2023)

CCFLA's Net Zero Carbon Buildings Policy and Finance Portal

Achieving net zero carbon buildings is crucial for cities to reduce emissions and keep the world on track to limit global warming. CCFLA's portal provides insights and research on policy and financing instruments for cities to overcome barriers to net zero carbon buildings.

4. Recommendations

Based on insights drawn from the case studies featured throughout the report, recommendations for key stakeholder groups have been identified to address the challenges and opportunities, ensuring they are practical and actionable across various regional contexts. By focusing on enabling factors and critical drivers for success, these recommendations aim to provide a roadmap for national and subnational governments, financial institutions, private sector, and other stakeholders involved in the sector's transformation.

Recommendations for national governments

	Recommendation	Steps
Targets and Frameworks	Set Targets to Accelerate and Achieve Near/Net-Zero GHG Emissions, Efficient and Resilient Buildings and Construction	• Set clear, ambitious national strategic targets, supported by interim sectoral targets, to enhance resilience (address climate risks), energy and materials efficiency, circularity and decarbonization of all buildings and the construction sector.

	Update, Integrate and Align National Policies and Strategies	• Update and/or develop new forward-looking policies and strategies that enable action, considering short to long-term action opportunities and partnerships.
		• Implement and enforce policies that enable and guide the construction and renovation of eco- or sustainable buildings (design, materials, technology and building operations) with integrated urban planning to enable wider-scale implementation:
		  ◦ To enhance public safety and health, ensure all buildings have sustainable design principles such as ventilation, access to natural light, and healthy materials that contribute to the well-being of occupants.
		  ◦ Require all buildings and infrastructure to be climate-resilient, and adapted to inevitable climate impacts.
		  ◦ Mandate all new buildings and renovations to be near/net-zero, addressing life-cycle emissions (building lifetime including decommissioning phase, materials and embodied energy), and considering circularity (construction waste reduction and reuse).
		  ◦ Ensure sustainable energy use in all buildings, with energy conservation and efficiency measures (behavior and technology use) and generating local renewable energy for own use and export (e.g. energy plus buildings).
		• Integrate and align all relevant policies and strategies, e.g. national climate and energy policies, horizontal and vertical alignment across NDC, NAP, LTS, NbSAPs, SDGs,
		• Regularly report on the country's contribution to international commitments.

	Recommendation	Steps

Targets and Frameworks	Develop and Implement National Roadmaps	• National ministries and relevant agencies should lead the development of an ambitious, comprehensive roadmap – based on the above targets, strategies and policies -- outlining the pathway to a zero-emission, efficient and resilient buildings and construction sector (GlobalABC Roadmap 2020), addressing:
		  • co-design through consultation and engagement with key stakeholders;
		  • the multiple dimensions of urban planning;
		  • new and existing buildings and their operation, appliances and systems, embodied carbon of materials, resilience and clean energy;
		• Implement, track progress and report in-country.

Regulatory Measures	Develop and Implement a Robust Regulatory Framework for Decarbonization and Resilience	• Develop and implement a cohesive regulatory framework to support decarbonization and resilience in the building sector. • Define building energy regulations to mandate all new buildings as near/net-zero energy and all renovations to substantially improve energy efficiency, addressing embodied energy and carbon emissions across the entire building life cycle. • Update sustainable public procurement aligned with the above.

	Set Standards and Implement Quality Control Mechanisms	• Ensure and enforce quality control during design, post-construction performance and deconstruction:
		  • energy performance standards for buildings (envelope and energy use: heating, cooling, ventilation systems, electricity for appliances).
		  • circular waste management, including construction waste and reuse.
		• Identify the enforcement agency(ies) and monitor progress annually

Collaboration	Implement an Effective Multilevel Governance Approach / Support Subnational Actions	• Co-define and collaborate with subnational governments on vertically and horizontally aligned policies, strategies and processes for well-coordinated action. • Allocate financial and technical resources to subnational governments, to enable implementation of local commitments and plans - as part of NDC implementation and investment. • Engage in the Marrakesh Partnership Global Climate Action (MPGCA) Human Settlements Pathway, the 2030 Climate Solutions, and GlobalABC – thereby benefiting from opportunities to share and learn.

	Recommendation	Steps
Collaboration	Enable Public-Private-People Partnerships (PPPPs)	• Facilitate and guide collaboration between the public and private sectors, as well as approaches to include citizens in the co-design of projects, the governance process and investments.
	Embed equity and inclusion	• Enable equitable access to safe, and healthy affordable eco-housing and infrastructure for all citizens - also through pro-poor planning. • Through policies and strategies, create approaches for an inclusive, equitable and just transition to a sustainable future - from the design stage to implementation and evaluation. • Regularly track progress, evaluate and adjust the approach, as needed.
	Collaborate with other governments	• Follow Buildings Breakthrough: Priority International Actions For 2024-2025 for international collaboration through shared frameworks and platforms to accelerate global progress towards decarbonizing the building sector. • Support the implementation of the Chaillot Declaration through the Intergovernmental Council on Buildings and Climate (ICBC) to strengthen international cooperation and drive global action in the building sector.
	Collaborate with NGOs and other networks	• Bring in and expand expertise by working with local, national, and international NGOs and networks.
Innovation	Create Opportunities for Innovation and Creativity	• Simplify bureaucratic processes and procedures. • Create an enabling and supportive environment for innovation and creativity in decarbonizing the built environment and enhancing resilience. • Stimulate competitions for creative and innovative concepts and approaches. • Encourage pilots and the scale-up or widespread replication of successful models.

Recommendations for subnational governments

	Recommendation	Steps
Targets and Frameworks	Assess Local Context and Needs	• Assess the local context: territorial and sectoral greenhouse gas emissions, climate risks and vulnerabilities impacting the built environment and local infrastructure - also for government operations (e.g. sea-level rise, extreme heat, flood risks, water scarcity, ..). • Assess available expertise, needs, and opportunities for sustainable urban development. • These assessments inform strategy, policy and regulation update requirements, and can help identify priority actions and investment needs.
	Set Direction of Ambitious Local Decarbonization and Resilience	• Define clear near/net-zero carbon targets for government operations (incl. municipal buildings and energy use) and for the territory. • Short to long-term targets, sectoral targets relevant to buildings and construction, also for operational and embodied emissions. • Adopt context-specific and inclusive strategies.
	Identify Integrated Urban Planning and Nexus Opportunities	• Develop and implement ambitious Climate Action Plans / Sustainable Development Plans / Thematic Plans (which reference the targets) • Explore integrated urban planning opportunities and incorporate building sector decarbonization and resilience – create nexus opportunities and synergies (e.g. local renewable energy generation and use, nature-based solutions to cool urban heat island effect, local circularity and sustainable mobility).
	Effective Governance: Vertically and Horizontally Aligned Approach	• Set targets that align or go beyond national targets – be ambitious! • Align local building sector decarbonization and resilience efforts within their own governance structures and systems. • Align vertically to national climate, energy and other relevant strategies and policies (e.g. NDC, NAP, NbSAP, ..). • Engage with the Buildings Breakthrough to collaborate internationally and leverage shared frameworks for accelerating decarbonization and resilience in the building sector.

	Recommendation	Steps
Regulatory Measures	Align Standards with Local Context	• Assess and adapt standards (such as building codes) to ensure alignment with local conditions, including reviewing national and international frameworks and integrating them with local needs, capacities, and climate vulnerabilities.
	Implement Monitoring and Measuring Mechanisms	• Implement clear and measurable monitoring and evaluation frameworks, tracking progress towards decarbonization, energy efficiency, and climate resilience goals. Establish baseline data for energy use, emissions, and building performance metrics.
Collaboration	Empower Local Leadership	• Support and promote local leaders (both political and technical leaders) as champions of the strategy. Champions can support awareness-raising and promote opportunities for action – addressing citizens, NGOs, and the private sector. • Local and regional governments can benefit from existing guidance and support from local, national and international NGOs and networks.
	Ensure Just and Equitable Access	• Prioritize pro-poor planning, and act for the vulnerable in your community. • Proactively support affordable eco-housing for all – both new and renovated buildings. • Mobilize widespread citizen support for the rapid energy transition, resilience and decarbonization efforts. • Adapt to a changing climate and enhance local resilience to climate impacts - aim to minimize disruptions during climate-related events.
Financial mechanisms	Secure Access to Finance and Investment	• Understand finance and investment needs. • Explore opportunities to connect these to local socio-economic development (job creation, empowering people). • Identify opportunities in own governmental budget to contribute to actions (soft measures and infrastructure). • Mobilize private sector and citizen investment (e.g. PPPPs). • Inform other levels of government on finance/investment needs – to be embedded in the NDC and other national investment and implementation plans. • Define and implement incentives and disincentives to drive local investment.

Recommendations for financial institutions

	Recommendation	Steps
Targets and Frameworks	Support Subnational Climate Action	• Define approaches to integrate subnational climate action and sustainable public procurement in own corporate and thematic strategies. • As seed funding for future investments, provide technical assistance for project preparation and implementation at the subnational level. • Coordinate available donor funds to support a wider diversity of subnational territories.
	Promote Enabling Frameworks	• Support in-country financial governance – updating vertically aligned processes and systems to enable the well-coordinated flow of funding, finance and investment. • Ensure stable intergovernmental fiscal transfers. • Encourage multilevel governance cooperation on innovative ways for subnational governments to raise own-source revenues.
Regulatory Measures	Incorporate Operations, Maintenance and End-of-Life Considerations	• Include the operations, maintenance, and end-of-life costs in project funding requests to address gaps in national funding sources, which often only covers project implementation costs.
Financial mechanisms	Support Sustainable Infrastructure through Innovative Financial Mechanisms	• Develop financing vehicles for local currency and facilitate access to finance for subnational banks. • Address coherent well-integrated urban planning and climate-related challenges/opportunities – resilience, adaptation, mitigation and access to clean energy.
	Private Finance Mechanisms	• Increase financial mechanisms earmarked for green building projects and enhance access to funds for sustainable construction. • Promote inclusive financing solutions that support a just transition and prioritize affordable housing, ensuring equitable access to funds for vulnerable populations.
Collaboration	Promote Collaboration between Project Preparation Facilities (PPF)	• Coordinate on sectoral aspects (e.g. buildings, energy, integrated approaches), to collectively ensure a growing subnational project pipeline to access in-country, regional and international finance. (see The Leadership for Urban Climate Investment (LUCI) approach)
	Coordinate Donor Funding Programs to Ensure Broader Access	• Improve coordination between funding programs and earmark resources for sustainability initiatives.

Recommendations for private sector

	Recommendation	Steps
Innovation	Foster Innovation in Design and Technology	• Lead the industry in adopting life-cycle thinking and Whole-Life Carbon Assessment across the value chain, with a focus on design for adaptability and disassembly. • Allocate resources to R&D for innovative building technologies and materials.
	Transform Supply and Demand Dynamics	• Drive market demand for low-carbon solutions by adopting and promoting Whole-Life Carbon approaches, and support industry-wide shifts toward sustainable practices.
	Promote Sustainable Supply Chains	• Require sustainability standards across the supply chain, encouraging all suppliers to reduce emissions through certified sustainable practices and low-carbon products.
Financial mechanisms	Integrate Financing for Own O&M	• Integrate comprehensive finance for own operations, maintenance, and end-of-life stages, considering the long-term environmental and financial impacts.
	Use Innovative Financial Mechanisms	• Use financial mechanisms such as green/sustainability/climate bonds, sustainability-linked loans, Public-Private(-People) Partnerships and others to implement solutions.
	Integrate Carbon Cost	• Accurately reflect the cost of carbon in the price of own products and services throughout the value chain.

Recommendations for other key partners

	Recommendation	Steps
Collaboration	(for NGOs and Networks) Collaborate with Other Key Stakeholders	• Collaborate between Green Building Councils, City Networks and other NGOs to build capacity, and implement sustainable building practices, using and sharing available knowledge and resources.
	(for Development Agencies) Provide Development Aid Support	• Provide technical and financial support for sustainable building projects and building capacity in local government staff as well as decision-makers.
	Partner with Educational Institutions	• Deepen cooperation with Universities and Research Institutions to advance knowledge and innovation in sustainable building practices.
	Engage Community Organizations	• Collaborate closely with local Community Organizations in the co-design and implementation of local projects that reflect community-specific needs, also fostering inclusive and sustained engagement.

5. Global initiatives supporting multilevel governance

Several significant global initiatives actively promote multilevel governance and action to accelerate climate action. A snapshot is provided below.

- **Global Alliance for Buildings and Construction (GlobalABC)** and the **Subnationals Action Group**

  The GlobalABC is the leading global platform for national and subnational governments, the private sector, civil society, research, and intergovernmental organizations committed to a common vision: A zero-emission, efficient and resilient buildings and construction sector. The GlobalABC Subnationals Action Group, co-led by GIZ, ICLEI, UNEP and UN-Habitat focuses on accelerating local solutions for a just and inclusive transition towards a decarbonized and resilient buildings and construction sector, by facilitating multi level stakeholder dialogues, enabling sustainable socio-economic development and mobilizing access to finance. It includes 16 significant global organizations.

- **Sustainable Urban Resilience for the Next Generation (SURGe) Initiative**

  Coordinated by UN-Habitat and ICLEI, SURGe is designed to be a convening space to connect local, national, and global levels to coordinate collective climate action and to improve collaboration between sectoral initiatives through five integrated sectoral tracks: buildings and housing, urban energy, urban waste and consumption, urban mobility, urban water.

- **Coalition for High Ambition Multilevel Partnerships (CHAMP)**

  The CHAMP was launched by the COP28 Presidency to accelerate climate action globally by supporting greater collaboration between national and subnational governments Through CHAMP, which has been endorsed by 74 countries to date, national governments pledge to enhance cooperation with their subnational governments in planning, financing, implementing, and monitoring climate plans and strategies. They also commit to better integration of subnational mitigation and adaptation actions in the updated NDCs.

- **Subnational Climate Action Leaders' Exchange (SCALE)**

  The SCALE Zero Emissions and Resilient Buildings (ZERB) Accelerator aims to fast-track progress of national and subnational actors towards the Buildings Breakthrough initiative and to advance global targets for rapidly reducing worldwide operational and embodied carbon emissions from buildings over the next decade. This multistakeholder partnership is led by the US Department of State, Bloomberg Philanthropies, World Resources Institute, C40, Under2 Coalition, Pacific Northwest National Labs, and University of Maryland.

- **UNEA-6 Cities and Regions Summit**

  The UNEA-6 Cities and Regions Summit convened by the UN Environment Programme, emphasized the importance of involving subnational stakeholders in international and national programs to effectively address global environmental and climate change goals.

- **Chaillot Implementation and insights from the Local Government Roundtable at the Buildings and Climate Global Forum**

  The Local Government Roundtable held during the Buildings and Climate Global Forum in Paris, in March 2024, highlighted the need to engage subnational governments in the process of establishing and implementing NDCs and national building roadmaps towards zero-carbon and resilient buildings. This Forum concluded with the adoption of the Declaration de Chaillot which established the **Intergovernmental Council for Buildings and Climate** and tasked the GlobalABC, hosted by UNEP, with coordinating its work to exchange insights, share achievements, address challenges, and assess implementation of related initiatives.

- **Driving Decarbonization through the Buildings Breakthrough Framework**

  The Buildings Breakthrough was launched by UNEP and the Governments of France and Morocco at COP28. This framework is a vital global initiative designed to accelerate the decarbonization and resilience of the built environment, with the stated goal of making near zero emissions and climate resilient buildings the new normal by 2030. A central tenet of the framework is the recognition that local governments play a crucial role in achieving climate goals and driving forward the transformation of the buildings sector. The GlobalABC Subnationals Action Group will ensure that subnational considerations are integrated and scaled where relevant across the six Priority Action Areas of the Buildings Breakthrough: Standards and Certifications, Demand Creation, Finance and investments, Research and Deployment, Capacity and Skills, Landscape Coordination. By mainstreaming subnational considerations across these priority areas, the GlobalABC Subnationals Action

Group and Coordinating Initiatives help to ensure that local governments are equipped with the tools, knowledge, and support needed to contribute effectively to the global decarbonization agenda, driving real-world impacts in the buildings sector.

- **Marrakesh Partnership Global Climate Action (MPGCA)**

  Under the leadership of the High-Level Champions, the Marrakech Partnership for Global Climate Action (MPGCA) supports the implementation of the Paris Agreement by enabling collaboration between national governments and non-Party stakeholders such as cities, regions, businesses, investors, and civil society including youth, Indigenous Peoples and local communities to immediately lower emissions and increase resilience against climate impacts.

- **Local2030**

  Localizing the SDGs is a network and platform that supports the on-the-ground delivery of the SDGs, with a focus on those furthest behind. Local2030 includes UN agencies as well as local and regional governments and their associations, national governments, businesses, community-based organizations and other local actors who work together to support localization of the SDGs. Via Local2030 online platform, Local2030 partners are sharing tools, experiences, new solutions and guides to support SDG localization. A core feature is the toolbox, which contains a range of concrete, practical and adaptable mechanisms and instruments that support the development, implementation, monitoring and review of locally-appropriate SDG actions.

6. Conclusion

This report **"Local Solutions for Green Buildings and Construction - Accelerated through Multilevel Action and Partnership"** emphasizes the critical role of subnational governments in addressing climate change, particularly in the building and construction sector. As construction and building operations account for 37% of global energy-related CO_2 emissions, they represent a high-priority area for decarbonization and the journey toward achieving the NDCs. Subnational governments, given their proximity to local communities and deep knowledge of regional challenges, are uniquely positioned to develop, implement, and monitor climate action plans that are locally tailored yet aligned with national climate objectives. The main roles of subnational governments in achieving national goals are as follows:

- **Collaboration across Levels**

  MLG fosters partnerships between national, regional, and local governments, ensuring that policies are harmonized and resources are effectively allocated. This collaboration is vital for creating a unified approach to addressing climate challenges and promoting sustainable urban development (Global Covenant of Mayors, 2019).

- **Enabling Local Climate Leadership**

  Through MLA, subnational governments are empowered to take the lead in climate action. Global initiatives, such as CHAMP, provide a great opportunity to enhance cooperation between national and subnational governments in the planning, financing, implementation, and monitoring of climate strategies, with a view to enabling subnational governments to contribute to further enhancing NDCs (UN-Habitat, 2024b; COP28 Presidency et al., 2023).

- **Facilitating Access to Finance**

  Subnational governments play a critical role in securing access to finance by aligning investments with local needs, mobilizing public and private resources, and providing incentives for sustainable solutions. They play a crucial role in highlighting local finance gaps, ensuring these are prioritized and addressed in NDCs and national plans.

- **Piloting and Testing Innovation**

  Leading local governments often approach local challenges and opportunities by defining pilot activities, or testing solutions (e.g., through Urban Labs or "Sandboxes"). These can then be considered for upscaling if they are successful. Often, such projects go beyond national ambitions and policies - and can even inform raising the bar at the national level through bottom-up leadership.

- **Capacity Building and Knowledge Sharing**

  MLG and MLA encourage the sharing of best practices and lessons learned among cities and regions. This exchange not only strengthens local capacities but also fosters a culture of continuous improvement and innovation in decarbonization efforts.

- **Measuring Impact**

  Regulatory frameworks also facilitate the establishment of common metrics for tracking progress and measuring the impact of local initiatives. Data-driven approaches enable local governments to evaluate their efforts and make informed decisions for future actions.

To conclude, the integration of MLG and MLA frameworks allows subnational governments to not only lead local climate action but also contribute to national and global efforts in decarbonizing the building and construction sector, turning ambitious climate goals into tangible outcomes. Their role is not only essential for achieving national and international targets but also for creating more sustainable, resilient, and inclusive communities worldwide.

References

C40 Cities. (2023). Achieving a decarbonised and climate-resilient built environment. https://c40.my.salesforce.com/sfc/p/#36000001Enhz/a/Hp000000GN3toaJ25bC0kbZk15zF2KNnbxI0RUalUlPmkzmXM.PnkRI

Chang, Judy, Marco Fornara and Rushabh Sanghvi. (2024). Financing Building Decarbonization: The Roles of Government and Private Sector Investors. Belfer Center for Science and International Affairs and the Mossavar-Rahmani Center for Business and Government. Retrieved from: https://www.belfercenter.org/publicationfinancing-building-decarbonization-roles-government-and-private-sector-investors

City Climate Finance Gap Fund and the Global Smart City Partnership Program. (2023). 2013 Smart City Solutions for Climate Change Mitigation. Authored by Patricio Zambrano-Barragán

Climate Policy Initiative. (2021). Net-zero carbon buildings in cities: Interdependencies between policy and finance. https://www.climatepolicyinitiative.org/publication/net-zero-carbon-buildings-in-cities-interdependencies-between-policy-and-finance/

COP28 Presidency, Bloomberg Philanthropies, UN-Habitat, & Marrakech Partnership for Global Climate Action. (2023). Joint outcome statement on urbanization and climate change from the COP28 Local Climate Action Summit and Ministerial Meeting on Urbanization and Climate Change. COP28. https://unhabitat.org/sites/default/files/2023/12/draft_joint_outcome_statement_on_urbanization_and_climate_change_final.pdf

GlobalABC. (2020). Why buildings? Our key messages. Global Alliance for Buildings and Construction. https://globalabc.org/why-buildings-our-key-messages

GlobalABC. (2021a). 2021 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector. Nairobi. Retrieved from: https://globalabc.org/sites/default/files/2021-10/GABC_Buildings-GSR-2021_BOOK.pdf

GlobalABC. (2021b). Decarbonizing the building sector: 10 key measures. Retrieved from: https://globalabc.org/sites/default/files/2021-08/Decarbonizing%20The%20Building%20Sector%20-%2010%20Key%20Measures.pdf

GlobalABC. (2024). Global Status Report for Buildings and Construction: Beyond foundations: Mainstreaming sustainable solutions to cut emissions from the buildings sector. Nairobi. https://doi.org/10.59117/20.500.11822/45095

GlobalABC Adaptation Working Group. (2024). Achieving Resilience in the Built Environment. Why are we still not adapting? https://globalabc.org/resources/publications/why-are-we-still-not-adapting-instigating-adaptation-built-environment

GlobalABC Materials Hub. (2024). 10 Whole Life Cycle Recommendations for the Buildings Breakthrough. Retrieved from: https://globalabc.org/news/10-whole-life-cycle-recommendations-buildings-breakthrough

GlobalABC Subnationals Action Group. (n.d.) GlobalABC Subnationals Action Group Core Messages and Support Services. [Unpublished]

GlobalABC, & Programme for Energy Efficiency in Buildings (PEEB). (2024). NDCs for buildings: Ambitious, investable, actionable, and inclusive. Global Alliance for Buildings and Construction. https://globalabc.org/resources/publications/ndcs-buildings-ambitious-investable-actionable-and-inclusive

Global Covenant of Mayors (GCoM). (2019). For Cities, by Cities. Retrieved from https://www.globalcovenantofmayors.org/wp-content/uploads/2019/09/2327_For_cities_by_cities_v18_1.original.pdf

Global Covenant of Mayors (GCoM). (2023). The Multilevel Climate Action Guide for Decision Makers https://www.globalcovenantofmayors.org/press/the-multilevel-climate-action-guide-for-decision-makers/

ICLEI. (n.d.). ICLEI's Just Transition Framework. [Unpublished].

ICLEI – Local Governments for Sustainability, Circle Economy, Metabolic, and Ellen MacArthur Foundation. (2021). Circular City Actions Framework: Bringing the circular economy to every city. Bonn, Germany. https://circulars.iclei.org/wp-content/uploads/2021/10/Circular-City-Action-Framework_V2.pdf

IEA. (2023). Tracking Clean Energy Progress 2023. IEA, Paris, France. Retrieved from: https://www.iea.org/reports/tracking-clean-energy-progress-2023

IEA, IRENA & UN Climate Change High-Level Champions (2023), Breakthrough Agenda Report 2023, IEA, Paris https://www.iea.org/reports/breakthrough-agenda-report-2023

IFPEB (2024). Sufficiency and the Built Environment: Reducing Demand for Land, Floor Area, Materials and Energy as the first step towards sustainable buildings. Retrieved from: https://globalabc.org/resources/publications/sufficiency-and-built-environment

International Finance Corporation (IFC). (2019). Green buildings: A report on the global green building market. https://www.ifc.org/en/insights-reports/2019/green-buildings-report

IPCC. (2018). Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24, doi:10.1017/9781009157940.001.

IPCC (2022). Annex II: Glossary [Möller, V., R. van Diemen, J.B.R. Matthews, C. Méndez, S. Semenov, J.S. Fuglestvedt, A. Reisinger (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2897–2930, doi:10.1017/9781009325844.029.

IPCC. (2022). Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi:10.1017/9781009157926.011

IRP. (2020). Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future. Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N. A report of the International Resource Panel. United Nations Environment Programme, Nairobi, Kenya. Retrieved from: https://www.resourcepanel.org/reports/resource-efficiency-and-climate-change

Isandla Institute. (2024). Making Sense Of A Just Urban Transition For Informal Settlement Upgrading. https://www.isandla.org.za/en/projects/just-transition/item/download/377_82f3f2d59156e4fb8e0083817e61cf5a

Sevilla Núñez, P. (2024). Who will cities be for? [Report]. NYU Center on International Cooperation. https://cic.nyu.edu/wp-content/uploads/2024/06/Who-Will-Cities-Be-For-April-2024.pdf

OECD. (2019). Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences, OECD Publishing, Paris, https://doi.org/10.1787/9789264307452-en.

OECD. (2022). Decarbonising Buildings in Cities and Regions, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/a48ce566-en.

One Planet Network. (2024). Global framework for action: Harnessing sustainable and circular public procurement to drive demand for near-zero emissions and resilient buildings – Common principles. Retrieved from https://www.oneplanetnetwork.org/sites/default/files/2024-12/FOA%20Common%20Principles.pdf

Program for Energy Efficiency in Buildings (PEEB). (2023). Buildings in the NDCs: Mapping Targets on Buildings in the Nationally Determined Contributions (NDCs). https://www.peeb.build/imglib/downloads/PEEB_Report_Buildings-in-the-NDCs.pdf.

UCLG. (2022). TOWARDS THE LOCALIZATION OF THE SDGs: Local and regional governments breaking through for a sustainable and just recovery - Local and Regional Governments' Report to the 2022 HLPF. United Cities and Local Governments, Barcelona.

UNEP. (2023). Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Nairobi. https://doi.org/10.59117/20.500.11822/43922.

UNEP. (2024). Building and Construction Fact Sheet (UNEP Sectoral Solution to Climate Change). Retrieved from: https://globalabc.org/resources/publications/building-and-construction-fact-sheet-unep-sectoral-solution-climate-change

UNEP and Yale Center for Ecosystems + Architecture (2023). Building Materials and Climate: Constructing a Future. Nairobi. Retrieved from: https://wedocs.unep.org/handle/20.500.11822/43293

UN-Habitat. (2021). Leveraging Multi-Level Governance Approaches to Promote Health Equity: A Guide. https://unhabitat.org/a-guide-leveraging-multi-level-governance-approaches-to-promote-health-equity

UN-Habitat. (2022). World Cities Report 2022. Retrieved from: https://unhabitat.org/sites/default/files/2022/06/wcr_2022.pdf

UN-Habitat. (2023a). Multi-Level Governance for Effective Urban Climate Action in the Global South.

UN-Habitat. (2023b). Multilevel Governance for SDG Localization. Retrieved from: https://cdn.prod.website-files.com/624c56b35ab98eb3101d5995/63986d986ba64f50831593f2_MLG%20for%20SDG%20localization_Final%20report_06122022_small.pdf

UN-Habitat. (2024a). Local Action for Global Goals - An Opportunity for Enhancing Nationally Determined contributions. Retrieved from: https://unhabitat.org/sites/default/files/2024/02/un-habitat_ndcanalysis-technicalbrief.pdf

UN-Habitat. (2024b). Urban Content Of Ndcs Local Climate Action Explored Through In-Depth Country Analyses 2024 Report. https://unhabitat.org/sites/default/files/2024/06/ndc_global_report_2023_v4_watermark.pdf

World Bank. (2019). $4.2 trillion can be saved by investing in more resilient infrastructure, new World Bank report finds. Retrieved from: https://www.worldbank.org/en/news/press-release/2019/06/19/42-trillion-can-be-saved-by-investing-in-more-resilient-infrastructure-new-world-bank-report-finds

World Green Buildings Council (WorldGBC). (2023). Sustainable and Affordable Housing Report. https://worldgbc.org/article/sustainable-and-affordable-housing/

World Resources Institute Türkiye (WRI Türkiye). (2023). Türkiye Building Sector Decarbonization Roadmap: Extended Summary. WRI Türkiye. https://wrisehirler.org/sites/default/files/Turkiye%20Building%20Sector%20Decarbonization%20Roadmap.pdf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