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BRIDGE FOR CITIES

ACCELERATING CLIMATE ACTION THROUGH URBAN INNOVATION

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This publication is meant to serve as an expatiation of the discussions conducted during the 2023 edition of UNIDO's Bridge for Cities event, which took place in Vienna from 4 to 5 September 2023 under the topic "Accelerating climate action through urban innovation".

The articles collected in the compendium are a collection of innovative best practices for urban development. They reflect the views of a variety of stakeholders – city leaders, development partners and financial institution – in order to reflect the multifaceted reality of sustainable city planning.

The Innovation Compendium should be read in conjunction not only with the discussions which took place at the event, but also with the examples of concrete policies and initiatives collected in the Bridge for Cities Knowledge Platform. As a living document, the present publication is open for additional contributions by Mayors, city leaders and urban development experts, so as to sparkle a fertile discussion on inclusive and sustainable urban-industrial development.

DISCLAIMER

Climate Action and Urban Innovation as Catalyst for Global Transformation

Gerd Müller
Director General, UNIDO

The global climate crisis is reaching a critical point, threatening nearly half of the world's population with the devastating repercussions of climate-related disasters and severe water shortages. The urgency of this situation cannot be overstated; the world is standing on the edge of catastrophe, and time to act is running out.

Urban areas lay at the centre of many climate and environmental issues. Cities are home to over half of the world's population, and this figure is projected to rise to as much as 75% by 2050. Cities, thriving hubs of activity and innovation, are both challenge and chance. The challenges they face are clear: heightened vulnerability to extreme weather events, a dire shortage of essential infrastructure, and rapid population growth with all its associated demands and strains. The need for reliable clean water supplies, sewage systems, waste management, housing, and urban transport underscore the pressing need for sustainable urban development.

Cities and the industries they contain and support have an enormous influence on local, regional, and global ecosystems. They are the source of substantial carbon footprints, emissions, and environmental pollution. In the context of climate change and climate action, the industrial sector is a pivotal player with impacts on three interconnected dimensions.

Foremost among these is the fact that industry is one of the largest emitters of greenhouse gases. Throughout history, industries have significantly contributed to the accumulation of carbon dioxide and other greenhouse gases in the atmosphere, exacerbating global warming and all its consequences.

Industries are core contributors to both man-made climate change and environmental degradation, and they are also not immune to their effects. Increasingly, they face adverse consequences such as resource depletion. Such challenges stress how urgent it is for industries to adapt to the situation we have created for ourselves. Yet there is also a positive side. Amid these challenges, industry also has immense potential to lead the fight against climate change, and to preserve the environment. It can offer technological solutions, innovative business models, and green job opportunities. Moreover, through its products and practices, industry has the power to influence consumer behavior and lifestyles on a global scale.

The fight against climate change hinges on sustainable industrialization. This approach reconciles the dual role of industry as both a problem and a solution. By championing policies, technologies, and practices that prioritize sustainability and climate resilience, industries can take meaningful climate action while simultaneously generating millions of new, decent jobs.

The sheer scale of the climate crisis underscores the need for global cooperation to create enduring solutions. In the face of these formidable obstacles, one thing remains absolutely true: we must be realists, but we must not be pessimists – it is indeed possible to overcome all of the challenges we face as one world.

The United Nations Industrial Development Organization (UNIDO) has embraced the guiding principle of low-emission, climate-resilient development. This principle advocates for policies and technologies that empower nations to combat climate change while fostering economic growth. Essentially, UNIDO's strategy seeks to create win-win scenarios where climate action translates into prosperity. UNIDO further recognizes that addressing climate change impacts cannot

happen in isolation. The Organization actively seeks to maximize synergies with other critical areas such as energy, agribusiness development, food security, circular economy, and biodiversity. This holistic approach acknowledges the interconnected nature of global challenges. Nothing happens in isolation.

In the battle against climate change, innovation is the key. UNIDO views innovation as an essential tool for both mitigating and adapting to climate change. The evolution of technological options to reduce greenhouse gas emissions must continue unabated. UNIDO serves as a platform for technology transfer, mobilizing investments, and forging climate partnerships. These collective efforts speed up the development and adoption of sustainable technologies.

The world has witnessed a growing emphasis on public-private partnerships, which have emerged as sustainable urban projects. These alliances align with the collaborative ethos defining this initiative, and UNIDO is rightly giving them paramount importance.

The "Bridge for Cities" event, hosted by UNIDO with support from the Government of China, is a robust platform facilitating global collaboration for sustainable urban development. It supports the exchange of technology and expertise while nurturing city-to-city partnerships across the globe. This initiative casts a spotlight on cutting-edge urban development solutions. The eighth edition in 2023 delved into the central theme of "Advancing Climate Action through Urban Innovation", with participation of over 500 participants - including 20 Mayors and City Leaders.
Cities, with their pivotal role in promoting sustainable development and driving climate action, are centres of vitality and innovation. UNIDO, guided by the principle of "progress through innovation," recognizes cities as crucibles of progress. They excel across various domains, whether as hubs for urban industries, cutting-edge technology, or vibrant local artisan markets. Substantial progress materializes when cities engage in constructive dialogues, enabling innovative solutions to flourish and be adopted globally. UNIDO, with its wealth of experience and expertise, extends a warm invitation to cities worldwide to collaborate, sparking the engine of sustainable urbanization.

Industries and cities have multifaceted roles in the climate change narrative. They contribute to emissions while also offering potential solutions. Inclusive and sustainable industrialization, supported by UNIDO and its partners, provides the most promising path forward. By acknowledging the interplay of climate change with other global challenges and fostering innovation, we can forge a collective effort to combat climate change and secure a more sustainable and resilient future for all.

Gerd Müller, Director General, UNIDO

Gerd Müller became Director General of the United Nations Industrial Development Organization (UNIDO) in December 2021 following a successful eight-year tenure as Federal Minister for Economic Cooperation and Development in the German Government.

Gerd Müller has many years of experience in the fields of multilateral cooperation, sustainability, and innovative agriculture. Implementing the 2030 Agenda for Sustainable Development, the Paris Agreement on climate action, and the Convention on Biological Diversity are key focus areas of his work.

Amman, Jordan

Mr. Ahmad Malkawi
City Manager of Amman

Amman is one of the Middle East's thriving metropolises. It is the political, cultural, and commercial centre of Jordan and a successful regional economic powerhouse. Amman is home to more than 4 million residents, more than 42% of Jordan's total population. Amman has grown to be a regional hub in the Middle East, providing a strong example of tolerance, progress, and peacefulness.

The city of Amman and other Jordanian cities are facing major challenges that hinder their development and growth. These challenges are compounded by the instability in the region. Water scarcity, high population growth rate and migration, economic and unemployment, climate change, inadequate infrastructure and public transportation, rising traffic congestion, and other environmental, social and cultural challenges.

Amman is characterized by its great urban expansion due to the influx of migrants and refugees which has placed a huge strain on the city's resources and infrastructure, including water, education, unemployment, transportation, housing, and medical services. This has contributed to an 83% increase in public debt, a 30% increase in youth unemployment, a 40% increase in demand for water, and a 17% increase in rental costs[1].

Despite these challenges, in Amman we are proud of our diverse identity, which we see as a strength. Diversity and tolerance are vital to our past, our present, and our future and Greater Amman Municipality (GAM), has managed to address many of these challenges and has increased its services provision. Thus, following the traditional ways of working will not produce the desired results and will not achieve our vision. Therefore, it was essential for us to think of innovative ways to break away from the daily work and to move towards long term evidence-based planning of the city's future, to enable us to move from a reactive approach to proactive approach in the implementation of plans and initiatives according to the best international practices.

As Amman grows it will need to balance the demands of growth, equity and environmental protection. Moving toward sustainable development can help achieve this balance, especially if all entities work together in solidarity. Good governance and collaboration are the basis for sustainable urban development and a best practice that is adopted clearly in all of Greater Amman Municipality processes, goals and plans.

Amman, under the guidance of His Majesty King Abdullah II, has joined other global cities around the world that are working to localize and streamline the SDGs into their strategies and plans. Amman has been working towards this end for over a decade, aligning all its projects and programmes with the SDGs to ensure that the local agenda is properly interlinked with the national agenda of Jordan, the 2030 Agenda for Sustainable Development and the New Urban Agenda.

Amman's commitment is evident through the provision of its comprehensive plans and strategies such as Amman Resilience Strategy, Amman Climate Change Plan, the Green City Action Plan, and the smart city road map. All these ambitious plans were taking into consideration within Amman strategic plan (2022-2026), that includes 4 priorities, the quality of life and the environment, transportation and infrastructure, investment, and finally the legislation, with focus on public transport, climate change, environmental diversity, waste management and urban planning, and the promotion of the role of community with participatory approach.

The Greater Amman Municipality (GAM) has been transitioning towards climate change

[1] Amman Resilience Strategy 2017

mitigation and adaptation strategies. It has developed a comprehensive Climate Action Plan and climate change measures to reduce exposure to environmental hazards and reduce GHG emissions. These strategies have the objective to achieve a resilient city and promote sustainability in the city.

The Municipality is currently working on major strategic projects to curb the effects of climate change, including smart city applications and electronic transformation, as the Municipality completed the automation of services, as the first national institution to provide all its services electronically. Moreover, mainstreaming renewable energy is a priority, improving the public transport system and implementing infrastructure projects for BRT that would provide an efficient and fast system. The public transport fleet in the capital to be environmentally friendly, high-specification and low-carbon, through buses running on electricity and diesel Euro5.

As the national and regional centre for international cooperation, the city of Amman is crucial to the achievement of the Sustainable Development Goals (SDGs) in Jordan and the Arab region as a whole. In this context, the lack of urban data collection tools is one of the challenges of advancing its sustainable urban development. Addressing this challenge, UN-Habitat, ESCWA, and the United Cities and Local Governments - Middle East and West Asia Section (UCLG-MEWA), in close cooperation with the Greater Amman Municipality, led the development of the first Voluntary Local Review (VLR) in the Arab region.

This VLR does not solely discuss the city's actions and performance against the selected SDG targets based on available data, but also analyses the consequent implications on policy and practice in order to improve Amman's performance against SDG 3, 7, 9, 11, 13, and 17. Its mechanism has become an essential tool for cities around the world in reporting and tracking SDGs progress. This review includes key messages to guide the sustainable urbanization of Amman in the coming years and emphasizes the long-standing commitment of the Greater Amman Municipality and the United Nations to continuously work together towards the achievement of the 2030 Agenda, while leaving no one and no place behind.

All of these efforts undertaken by GAM aim to achieve sustainability for the city of Amman, and to contribute to national efforts and to face the effects of climate change, as well as to contribute to the efforts made the international community to achieve the United Nations sustainable development goals, and will eventually and hopefully enable Amman to adapt, grow and respond effectively and efficiently in response to the city's changing needs and growth while ensuring high quality of life for the citizens.

Mr. Ahmad Malkawi
City Manager of Amman

Eng. Ahmad Malkawi joined the Municipality of Amman staff in 1994 to serve as a civil engineer.

Since that time, Ahmad helped in directing different departments in the municipality, which encompasses all functions related to road construction, implementation and maintenance, emergency centers,

environmental services, solid waste Management projects, parks, and the transportation project “BRT". As well as the infrastructure projects financed by AFD, EBRD, WB, DFD, etc.

He was appointed to the position of Deputy City Manager for Public work in 2013, and then he promoted to the position of City Manager of Amman in March 2019, focusing on strategic planning, capital improvements, process and decision transparency, community engagement and departmental accountability.

He is the Chairman of the Supreme Committee for Strategic Planning and Performance Management and Chairman of the Awards and Institutional Excellence Committee.

Antsirabe, Madagascar | Climate Challenge, Antsirabe is Committed

Rasamimanana Honors Gabriel (Dr UNOH)
Mayor of the Municipality of Antsirabe-Madagascar

Madagascar is a country renowned for its natural environment. However, over the last decade, environmental problems are numerous throughout the country, and they are also highly visible in the city of Antsirabe. They are mainly caused by human activities such as bush fires, illegal exploitation of resources, unsustainable farming practices, and other sources of pollution.

We also all know that rapid global warming is mainly caused by greenhouse gases released by our activities and our livelihoods. We use resources and emit greenhouse gases, depending on fossil fuels. By way of illustration, Antsirabe is the country's second-largest industrial hub, which concentrates many industries and processing plants including textiles, soft drinks, agricultural processing and dairy products, tobacco and chemicals. It is also a town with a high level of pastoral activity, which accounts for 70% of its land area. The majority of the population lives from agriculture and livestock farming.

The adverse effects of this climate crisis affect not only the fauna and flora of the country, but also the lifestyle of its inhabitants and the national economy. The current trends are the decrease of natural forests, the intensification of land erosion, contamination and water scarcity, the lack of water supply, the risk to the food supply, the increase in nutritional diseases, the increase in floods of rivers and the widening of flood plains, damage to road infrastructure and disruption of travel during cyclones, loss and damage of structures, overheated buildings, power failure, increased air and water pollution, damage to electricity generation and distribution infrastructure, water scarcity for hydropower generation and cooling of thermal power plants. The combination of such challenges heavily impact the local economy, notably since agriculture is the main activity and tourism is positioned as one of the pillars of the development of the city.

All cities must therefore adapt to the new constraints and changing needs of their inhabitants as a result of these climate crises, and provide solutions to their many challenges, such as combating global warming, reducing greenhouse gas emissions and air pollution, reducing energy consumption, managing rapid urbanization, remedy shortages of land and natural spaces, reduce soil sealing, reduce consumption of natural resources. They also need to develop a systemic approach to municipal functions by enabling optimal management of interactions between traditional compartmentalized sectors (transport, water, waste, etc.). By doing so, cities may better control the use of natural resources (water, energy, etc.), car use, enhance resilience to natural and industrial hazards, reduce noise, water and soil pollution, manage and recover waste, create a circular economy at the service of the city, and preserve natural spaces and introduce more biodiversity. Cities must also reduce their environmental footprint by improving the energy efficiency of buildings and controlling the flow of water and various wastes, while increasing their range of services and functionalities (reconciliation of housing, services, facilities and public transport).

Aware of all these circumstances and despite limited funding, the Municipality of Antsirabe has already implemented its action programme to adapt to the adverse effects of climate change.

To preserve the cleanliness of the city, protect natural resources, protect the environment, and beautify the city by creating and maintaining green spaces and public gardens, the Municipality has created a directorate in charge of the environment.

As part of activities to reduce carbon emissions and promote reforestation and green spaces, the Municipality plans to transform the municipal nursery into a showcase of the actions of the Town Hall in the supply of seedlings and seeds to municipal gardens. The objectives are to encourage the population to green their property and promote the annual reforestation carried out by companies, associations, groups of people, students, and others and sensitize the population and industry to the fight against pollution and respect for the environment.

To reduce greenhouse gas emissions from municipal waste, the Municipality plans to improve the solid waste management system by reducing UPoPs releases from open burning of waste, it will establish a system of pre-packaging, collection and sorting, allowing the separation of compostable, recoverable and non-recoverable waste at the household level. The Municipality will also establish a collection center of recoverable waste, and aims at raising public awareness to change their waste habits. As a contribution to remedy food and nutritional insecurity, the Municipality plans to promote composts by setting up a composting site for fermentable waste.

However, it is clear that much remains to be done for the city of Antsirabe to achieve concrete and sustainable results. The issue of climate change is common to all of us and it is a shared struggle.

Rasamimanana Honors Gabriel (Dr UNOH)
Mayor of the Municipality of Antsirabe-Madagascar

Born on 17 July 1968 in Antsirabe, Dr RASAMIMANANA Honoré Gabriel lives in Antsirabe since his childhood. He is passionate about sports including petanque, swimming and table tennis.

Graduated in Master in Science in Veterinary Medicine and having the capacity in technico-commercial, RASAMIMANANA Honoré Gabriel began his career as an economic operator in the fields of veterinary pharmacy and agri-food processing units.

Elected Mayor of the Municipality of Antsirabe since 2020 to date, he is committed to the people, to take up the challenge of making Antsirabe a prosperous and developed city. Since taking office, he has shown a relentless

Dhaka North, Bangladesh | Green Skies & Blue Ground: Dhaka North's Climate Innovations

Atiqul Islam
Mayor of Dhaka North City Corporation, Bangladesh

Dhaka North is a city like very few others. With nearly a century of organic and largely unplanned growth, it today is home to a scarcely believable 49,000 people per square kilometre.

The various cycles of population booms that the city has seen has resulted in a very densely packed urban settlement, which has developed at the expense of the natural environment.

Water was once a defining characteristic of the city, with rivers, canals, lakes and other waterbodies throughout. Sadly, over the years many such running streams have been filled up to make space for the crush of people. As the waterbodies reduced, so too did the greenery in the city. While the older parts of the city still retain much of their greenery, the newer parts built in the last sixty years are largely shorn of tree cover.

The reality is that today, large scale tree plantation initiatives are hampered by a lack of land. To make way for trees, one is required to displace buildings and people - hardly a practical solution.

The effect of both loss of tree cover and the reduction of waterbodies has been temperature increases and disruptions to indigenous ecology.

We've now started walking the long road to fix these problems.

Wherever possible, we are reclaiming and restoring illegally occupied or filled-in water bodies. We're doing our best to restore the waterway system, and revitalize the blue ecology of the city. These waterways are in fact also now being used for water taxis - reducing the snarl of traffic on the roads.

For these reclaimed waterbodies, we are now taking a nature-based, innovative approach to ensure that they do not meet the same fate of being filled-in and illegally occupied, as has happened before.

This approach is to demarcate the outline of the waterbodies by planting trees to form a natural boundary around them. To this border of trees, we are also adding walkways and bicycle lanes, and together these demarcate our lakes, canals, rivers and ponds.

When the waterbodies are no longer flanked by flat empty land, any illegal encroachment of it becomes a complicated undertaking thanks to the ring of trees. This strategy, as simple as it is, provides a two-pronged solution. It conserves water streams and envisions developing pockets of green spaces across the city.

Lack of open land in the city posits similarly complex challenges for restoring greenery, as it does our natural water channels.

Substantive afforestation efforts in available spaces throughout the city has prioritized planting native species to make our urban ecosystems more resilient, but as climate impacts facing our city intensified, we knew that a more holistic approach is called for. We analysed the physical infrastructure of the city, and quickly realized that the most underutilised surface area throughout the city was that of all the rooftops of buildings.

After consultations with local urban planners, architects, engineers and botanists, we concluded that rooftop gardens could potentially play a tremendous role in helping trap pollution, reducing energy usage in buildings and lowering extreme-heat exposure of residents.
Thus, we made the decision to embark on a campaign to encourage homeowners to install rooftop gardens in their buildings.

This however, led us to confront another reality. The spatial demographics of the city sees almost all people living in apartment buildings, which are collectively co-owned by multiple people. The rooftops are thus co-owned communal spaces.

Individual owners may well agree with the concept of rooftop gardens, but ground-level realities suggest that no one apartment owner is willing to dedicate time and resources into maintaining a communal shared space. Achieving consensus amongst multiple-owners proved to be difficult in practice.

Thus, we had to reflect on how best we could find a path around this behavioural bottleneck. After some deliberation, we decided that the best way to incentivise the outcome we wanted was to offer some reward mechanism.

The reward would necessarily have to incentivise the apartment owner, and not the renter or occupant. We then approached the national government, to float the idea of allowing for targeted municipal tax breaks for buildings which install rooftop gardens.

We are pleased to report that the national government not only approved our proposal, but also decided to roll this out across every jurisdiction in the country.

Thus, Dhaka North now offers a discount on property holding taxes for owners of all buildings which install rooftop gardens.

The project is still in its infancy, but the early signs are encouraging. Building owners have responded enthusiastically, residents are driven to 'think green', and a cottage industry has started employing garden designers and landscape consultants.

We hope to continue finding similar innovations within the confines of the city to combat the effects of climate change, and to improve our city for all its dwellers.

Atiqul Islam Mayor of Dhaka North City Corporation, Bangladesh

Atiqul Islam is Mayor of Dhaka North City Corporation. He is currently serving his second term, having first been elected by popular vote in 2019. As Mayor, he governs the administration of approximately 10 million residents in Bangladesh's capital city.

He is an active participant in, and leader of, various international city-focused forums such as the Mayor's Migration Council (MMC) and C40 Cities. He is a member of the MMC Leadership Board, Vice Chair of C40 Cities, and a member of the C40 Steering Committee. He is also Co-Lead of the C40-MMC Task Force on Climate & Migration, and Chairman of the C40 Steering Committee for the South & West Asian Region.

For over three decades he has been a key figure in Bangladesh's RMG manufacturing industry. He is Managing Director of Islam Garments, which he founded in 1985 and today employs over 20,000 people. He served as the President of the Bangladesh Garments Manufacturers Exporters Association (BGMEA) from 2013 - 2014. During this time, he led the industry's crucial response and recovery after the Rana Plaza industrial crisis of 2013. Previously, as a Director of BGMEA, he was a part of the leadership team that eliminated child labour from the RMG sector.

European Investment Bank (EIB) | Urban Investment is a Key to Reaching Climate Goals

Werner Schmidt
Director, Urban and Territorial Development, EIB

In the decades to come, cities are projected to experience some of most severe consequences of climate change and be among the largest CO2 emitters. For a greener future, we must rethink now how we invest in urban development and innovation.

We live in times of rapid urbanisation. Cities currently account for two-thirds of the world's energy consumption and produce over 70% of global carbon emissions. By mid-century, 2.5 billion people are expected to migrate from rural to urban areas. It is therefore crucial we act today to prioritize green, sustainable, and inclusive urban development.

If we do not act, millions of people living in cities around the world will suffer the worst consequences of climate change. Temperatures can increase twice as much in urban concrete deserts as in rural areas[2]. Coastal megacities, home to tens of millions of people, are threatened by rising sea levels. Supercharged storms are bringing high volumes of rainfall in a short time and pose risks for urban areas as we sadly witnessed during the recent flood in Derna, Libya.

As they are both particularly vulnerable to climate change and a major share of emissions comes from urban areas, cities are central to decisive action against the climate crisis. Innovative solutions found in cities have spread across the board and this trend is set to continue. Pioneering approaches to urban resilience, such as those taken by Florence, show us that a lot can be done to adapt to rising temperatures and speed up the transition to carbon neutrality. With the help of the European Investment Bank, Florence financed its smart city plan and climate strategies to improve its resilience to future climate events such as floods, redeveloped green areas, public space and roads, advanced sustainable mobility and improved energy efficiency of public buildings.

Florence is a good example of what cities can achieve with the right plan, access to finance and expertise. **But we need to do more to help cities around the world realise their climate ambitions. The first step must be to address the main investment barriers that cities face.** Our research[3] shows that 60% of municipalities in the EU consider their investments in climate mitigation and adaptation infrastructure to be insufficient. Estimates made in preparation for the EU Mission on Smart and Climate-Neutral Cities suggest that an average European city will need to invest approximately €1 billion per 100,000 inhabitants to become carbon neutral. There is a large financing gap, and the figures quoted in different macro studies – for example the $4.5 trillion per year estimated by the World Bank, are so huge that we really need to see solutions at scale. With the European Green Deal, the EU aims to make the European economy sustainable and inclusive. The European Investment Bank (EIB) supports this growth strategy and is one of the world's main financiers of climate action and environmental sustainability. Last year, about 30% of all the EIB's lending supported urban development, and of that some 60% made a significant contribution to climate action. Although in absolute terms these are big numbers - about €17.5 billion of urban lending in 2022 – our resources will not be enough to close the financing gap. We need to look for ways to attract new sources of public and private sector investment and innovative approaches to deploying capital towards climate neutrality, such through green bonds, sustainable thematic framework loan facilities, and better ways of using grant funding to leverage and incentivise.

Next, we need to help cities when they lack the capacity to prepare complex climate action projects. 69% of EU municipalities say they lack experts with environmental and

[2] Climate change: Cities can be subjected to twice as much temperature increase so what can be done? | Euronews
[3] Skills shortage is delaying the green transition, EIB Municipality Survey shows

climate assessment skills[4]. Much of the EIB's work on the lending and advisory side is focused on building a suitable pipeline for financing. Cities need support to translate urban development strategies and climate action plans into tangible, bankable investments that can be implemented in a reasonable timeframe. Cities need help both to prepare projects themselves and to enable projects by providing capacity building. Instruments such as the City Climate Gap Fund, JASPERS, ELENA and the Invest-EU Advisory Hub, are good examples of such support.

Achieving carbon neutrality, however, requires urban infrastructure improvements beyond the direct control of cities and utilities. Electric vehicles, energy efficiency in private and commercial buildings and industrial processes, are not under the direct control of city administrations. Across Europe, it has been observed that 80-90% of the investments required for a city to attain carbon neutrality lie beyond the scope of municipal budgets. Cities, however, can leverage their planning powers and financial resources to encourage the private sector to invest in green infrastructure. This can be seen through the EU's "Smart and Climate Neutral Cities" initiative, one of five Horizon Europe research and innovation programmes for the years 2021-2027. It provides support that covers the climate transition of the entire city, not just the public sector parts under the direct control of city authorities. That means it asks cities to think about how industry will control industrial emissions, and how private individuals will transition to electric vehicles and renovate their homes to become energy efficient and ultimately carbon neutral. Cities need to understand the scale of these changes and think about how they can influence private sector behaviour and investment through their planning powers, through providing incentives, and through partnerships.

The world is currently not on track to meet the goals set out in the Paris Agreement and the United Nations' calls for an all-of-society approach to accelerate our progress[5]. As our window to reach our climate goals is closing, and with rapid urbanisation in many parts of the world, cities must play a leading role both in reducing emissions and in adapting to the impacts of climate change. To secure a better future for all, we must therefore address the financing and skill gaps that cities face.

Werner Schmidt
Director, Urban and Territorial Development, EIB

Werner Schmidt has been working on project, policy and sector advisory for more than 25 years. He joined the European Investment Bank (EIB) in 1996 and on 1st February 2021, Werner became the Head of the Joint Assistance to Support Projects in European Regions (JASPERS) and took on the leadership of the Urban & Territorial Development Department, which oversees urban and regional development (Cohesion/Just Transition) in the Projects Directorate. Prior to joining the EIB, Werner worked inter alia for the World Bank, the European Commission and the German bilateral technical assistance organization in Albania, Pakistan, Russia, the Caucasus and Central Asia. Werner studied agricultural economics in Kiel and Weihenstephan, Germany.

[4] Skills shortage is delaying the green transition, EIB Municipality Survey shows

[5] Implementation must accelerate to increase ambition across all fronts, taking an all-of-society approach to make progress towards the Paris Agreement goals and respond to the climate crisis, finds technical report on first global stocktake | UNFCCC

Iloilo City, Philippines | ILOILO CITY CARES (Climate Actions towards RESilience)

Jerry P. Treñas
Mayor of Iloilo City, Philippines

The Iloilo City Government continues to take initiatives in combating climate change and sustaining the environmental needs of the metropolis for the benefit of the Ilonggos, the people of this highly urbanized city located in the heart of the Philippines.

Under the WHEELS roadmap for inclusive development of the Treñas administration, the care for environment and mitigating the impacts of climate change are established. WHEELS is an acronym for various programs, projects and services under Welfare, Health, Education, Environmental Management, Livelihood and Sustainability.

Iloilo City has relatively low elevation and is situated along the coast. Highly dense populations are located within the coastal areas and along the Iloilo River, making these communities highly susceptible to flooding and storm surge.

Major water shortage problems are recurring as the city experienced water crises due to the impacts of El Niño in 2007, 2009 and 2015. This year, imminent water crisis once again looms.

Over extraction of groundwater is also becoming a major concern, as the Metro Iloilo Water District (MIWD) and many households mainly rely on groundwater for potable water.

These are challenges that cannot be overlooked. The leaders must be decisive enough to place disaster and climate resilient development in the agenda given the vulnerabilities as a coastal city to various natural hazards compounded by climate change.

Thanks to the support of local leaders, national government agencies, private and business sector, and the academia, scientific information and data provided by the city's Climate and Disaster Risk Assessment and other similar studies have been used to make risk-informed decisions. These have been all aligned to the global and national policies on Sustainable Development Goals (SDGs) and to the Sendai Framework for Disaster Risk Reduction (SFDRR).

Innovative and dynamic strategies to safeguard the welfare of the people and future generations from the impacts of climate change have been put in place. Programs, projects and activities on climate actions have been plugged into the city's development plans with corresponding budget for each one.

On top of the priorities is the Three Tree Park Network Project. Aside from providing additional recreational facilities for the public and opportunities to bring people closer to nature to support efforts to achieve the SDGs, the tree park project primarily aims to help mitigate the effects of climate change and restore biodiversity in the city.

There is a need for immediate action as the effects of climate change can now be felt in the city, with the frequent and higher water level of flooding in the metro especially during high tide.

The planting activities of various tree species started at the Beach Forest along the coastal village of Boulevard, Molo. The City Government partnered with Zoological Society of London (ZSL) and telecommunications giant, Globe.

The native species of saplings burgeoning in the said areas were carefully selected with the active participation of native tree enthusiasts to create a much greener environment that will preserve ecological balance, enhance biodiversity, and combat the climate crisis.

The 1.6-hectare Beach Forest will be composed of an open cottage, sunset area, sunrise area, nursery, pavilion, and docking area where

identified beach trees will be planted and preserved. It will be complemented by indoor exhibits that will feature coastal plants, coastal marine life, and the city's coastal environmental profile.

The three-hectare Iloilo Tree Park in Lanit, Jaro will function as an arboretum or botanical garden that will feature a collection of different species of native trees and shrubs. It is currently undergoing filling works by the Department of Public Works and Highways to elevate the site to make it suitable for planting trees and to prevent flooding.

The United Architects of the Philippines (UAP)-Bahandi Chapter was tapped as partner for a creatively crafted design.

What is commendable is the promotion of the welfare of Indigenous People (Aetas) in the area who are included in the plans, making the initiative inclusive.

The added attractions include lagoons, art gallery and display center where native products of the Aetas will be offered to visitors.

The 35-hectare Mangrove Eco-park in Hinactacan, La Paz will have a visitor's learning center, gazebo orchidarium, pond, palmetum, boardwalk, arboretum, and bambusetum. It is envisioned to be a learning and promotion center for the protection of mangroves.

The city's open spaces are now being brought to a higher level of function, and the tree parks will fulfill the purpose of promoting community stewardship of green spaces, and to raise ecological awareness through education and outreach.

Meanwhile, a plan to connect the city's plazas, esplanade and tree parks via a network of bicycle lanes is being developed. Connecting these important public facilities by green lanes, one can truly call this a Tree Park Network.

This will complement the city's bike lane, called the Iloilo City Bike Network – a safe, scenic and eco-friendly bike path, and currently stretching 11 kilometers.

The City Government embarked on a bike lane linkage project to connect three major bike lane networks – Sen. Benigno Aquino Jr. Avenue, the University Loop, and the 12-kilometer bikeable section of Iloilo River Esplanade, plazas and parks across the city.

To note, the city government is also embarking on a massive rehabilitation of its district plazas to make them true people's public spaces that are not only beautiful but also safe and promotes healthy urban living.

So far, the beautified Plaza Libertad and Molo Plaza have already been opened to the public while the rehabilitation of Villa, Jaro, La Paz and Mandurriao plazas is ongoing.

La Paz Plaza is also home to a "blue koi lagoon" and "green butterfly garden" – City Government's partnership project with Global Business Power Corporation.

The City Government also continuously conducts tree planting at the floodway and major roads, and maintains the cleanliness and majesty of the Iloilo River.

The Iloilo River, once touted as the city's biggest septic tank, has now a thriving biodiversity, abundant marine ecosystem, source of livelihood, and a go-to-destination for well-being. Thanks to the tremendous effort through the years of the city's leaders in clearing the waterway and ridding it of illegal settlers, fish pens and debris.
All these efforts are geared towards promoting plant and animal diversity, benefiting both present and future generations of Ilonggos.

Iloilo City is a recipient of various awards and recognitions bestowed by national government and private agencies, and international development organizations because of its initiatives to combat climate change. It is grateful to all partners and stakeholders in its quest for sustainability, livability and resiliency.

Indeed, the call for local action is

demonstrated tangibly in the city's plans, programs and projects that results in transformational change in people's social behavior and mindset to rise against the effects of climate change.

Regarded as one of the model cities in the Philippines, the city is continually engaging with its constituents to come up with meaningful initiatives geared towards inclusive green growth.

Being touted as the City of Love, the local government has only the people's best interests at heart, with a clear vision of having a climate change-ready metropolis.

Truly, this is a government that CARES.

Jerry P. Treñas
Mayor of Iloilo City, Philippines

Jerry P. Treñas started his political career in 1986 when he was appointed as City Councilor. He was elected as City Councilor in 1995; three-term Mayor in 2001-2010; three-term Congressman of the Lone District in 2010-2019; and City Mayor since 2019. He is now on his second term.

He is happily married to Rosalie S. Treñas with whom he has five children.

A lawyer by profession, Mayor Treñas placed 11th in the 1982 Bar Examinations with a general weighted average of 88.325%.

He is a proud officer and member of various local, national and international special and policy-making bodies.

City of Malmö, Sweden

Sofia Hedén
Deputy Mayor in the City of Malmö

Malmö is a city with ambitious targets to reduce the city's carbon footprint. As one of the European Union's Mission for 100 climate-neutral and smart cities by 2030, we are firm in our determination to lead the way and showcase how cities can transition and attain the lowest possible climate impact. In order to succeed cooperation, locally as well as internationally, is an absolute prerequisite.

An insight that Malmö reached early was that while politicians and other decision-makers have an important role to play in the green transition, we cannot do everything. If we are to reach our goal of climate-neutrality by 2030 we need all parts of society to join in the transition – including those that we, as politicians, do not have a direct influence over. The question posed therefore is: how can the political level ease and encourage other actors' green transitions?

No actor can, on their own accord, make sure that we reach our climate objectives. All of society must muster our collective strength for us to succeed. At the same time those who can, must create the right setting for others. In Malmö, the city has taken on a great responsibility to function as a coordinating arena for all actors – business, academia, civil society and all residents of Malmö. It is about making it easy for all actors to do right and to be part of the green transition.

To create a transition that is also socially sustainable, the cooperation between all actors is of vital importance. It is not only a way to get a broader perspective in important matters, but also a way to create legitimacy and trust for the green society. The city of Malmö is actively working with creating the right settings for everyone to take part, for example through the Malmö Climate Contract. This is a project where local actors, together with the city of Malmö, commit to take steps to decrease their emissions. In exchange, the city promises to do our part by easing the transition for businesses and individuals through policies and decision-making.

The fundamental role of cities in the climate transition cannot be overemphasized. We live in a time of rapid urbanization where more people choose to move into cities. That is something we see clearly in Malmö, Sweden's fastest-growing large city. The challenge of Malmö, shared by so many other rapidly growing cities, is to handle the climate crisis, the rise in population and social justice simultaneously. At the same time as the city grows, Malmö needs to transition without increasing social injustices or drive away residents with less resources from their current areas in the city.

In that perspective, the eco-city of Augustenborg in Malmö serves as an inspirational model. Since the end of the 1990s this part of the city has functioned as a green testbed for a sustainable transition. The story of Augustenborg is the story of how a troubled part of the city was transformed into an economically, socially an ecologically sustainable part of Malmö. Augustenborg has also proven to be resilient against the extreme weathers associated with the climate crisis, not the least in conjunction with the heavy rains that hit Malmö in 2014. In that way Augustenborg is proof that the climate transition in itself is a prerequisite for the city to become more equal.

The large-scale and systematic transition that cities need to go through have never before been attempted. If Malmö is to succeed in its transition, we must continue looking outside of our own organization and prioritize collaboration – with other actors in Malmö, as well as with other cities both nationally and internationally. That is how we can create a climate transition that is sustainable in the long term, both ecologically and socially.

Sofia Hedén
Deputy Mayor in the City of Malmö

Sofia Hedén is since 2022 Deputy Mayor in the City of Malmö with responsibility for environmental and internal service issues, and the chairman for the city's environmental board. During Mrs Hedén's time in office, the city of Malmö has been chosen as a pilot city amongst the 100 cities already chosen by the EU Commission to lead the development towards climate neutrality by 2030. Mrs Hedén has a teaching degree in Swedish and social studies from Malmö University. Before she took office as Deputy Mayor, Sofia Hedén worked as a lower secondary school teacher for 20 years.

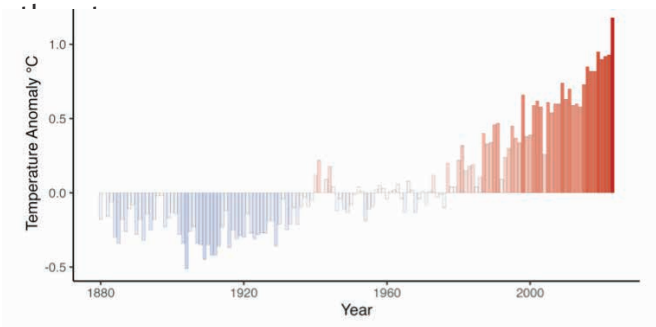
UNIDO | Action Needed for Cities in the 21st Century: Cooler, Compact, and Productive

Marco Kamiya, PhD
UNIDO

Making cities cooler, compact, and productive is imperative in the 21st century. Integrating the environment and urban planning with smart industrial policies is a priority.

As you may notice, another heatwave record was achieved in July 2023, continuing a pattern that has been customary in the last few years. Some of those who were in Europe in the summer of 2023 and decided to go seashore to swim in the Mediterranean Sea, south of Spain, Athens, or Turkey for holidays may have tried to read a climate fiction paperback —if heat allowed— such as Kim Stanley Robinson's The Ministry for the Future[6], where a heatwave in Uttar Pradesh in India kills twenty million people, and though the story finishes nicely as world leaders work together to save the earth, real-world heatwave scenarios causing massive deaths are becoming more probable.

According to NASA's Goddard Institute for Space Studies[7], the five hottest Julys since 1880 have all happened in the past five years, with last July hotter than any other month in the global temperature record. At this point, nobody can deny that heat is an existential



Source: NASA's Goddard Institute for Space Studies, [link]

Greece, Spain, and southern Italy have seen temperatures above 45°C, producing wildfires. In North America, the United States and Canada have suffered from fires and melting snow in their mountain ranges, causing flooding and mudslides. Hurricane Hilary blew from Mexico to American cities in August. In Australia, alarm is growing for an expected increase in ocean surface temperatures in the Pacific Ocean. In Latin America, depending on the location, rains and droughts destroy harvest and push people to migrate.

On top of global warming, the World Meteorological Organization declared in August the onset of El Niño (Spanish for 'little boy Jesus' as it usually peaks up in December)[8], referring to a warming of the sea surface in the central and eastern Pacific Ocean that occurs every two to seven years and raises the earth temperature. Thunderstorms and floods will increase by one- or two degrees Celsius, impacting globally from Asia, with fires in Indonesia to Australia and Africa, with expected damage to agriculture and fishing on the coasts of Colombia, Ecuador, Peru, and Chile.

So, while extreme weather and heat are constantly in the news, we focus on the interlinkages between heat and compact cities and how they are related to productive activities, finally reflecting on how smart industrial policies can help cities overcome current challenges.

Cooling Cities

Heat affects productive activities in many ways; perhaps the most visible are tourism patterns. In 'The Death of Summer,' Neil Ferguson[9], a British historian writing for Bloomberg, describes how vacationers will change their habits in summer if the temperature keeps increasing, with entire tourism value chains composed of restaurants, hotels, and airlines suffering in traditional destinations. Since people expect coastal cities to be underwater or prone to wildfire in the following decades, property prices are starting to discount, as it is already occurring from Miami to California in the US, passing to Caribbean urban settings, to South Asia and Pacific Island cities.

[6] Stanley Robinson (2020) "The Ministry for the Future", Orbit Books, US.
[7] NASA's Goddard Institute for Space Studies [link]
[8] World Meteorological Organization [link]
[9] Ferguson (2023), Bloomberg [link]

An American author, Jeff Goodell, has published a future cautionary tale in "The Heat Will Kill You First."[10] Goodell starts with some scary indicators of a Heat Index:

- 30 million: Number of people who live in extreme heat xxoday.(Above 85 °F degrees mean annual temperature) [29 degrees Celsius]
- 2 billion: Number of people who are likely to live in extreme heat in 2070.
- 2.5 miles per year: The average speed at which malaria-carrying mosquitoes are moving to higher, cooler latitudes.
- 210 million: Increase in number of people facing acute food insecurity since 2019.

The vivid description of the effects of heat provides a straightforward message: heat can kill you directly from the temperature or mosquito-borne pathogens malaria, dengue, zika, chikungunya, food emergencies, floods, or other resulting crises.

Another critical effect of heat is on productivity. The senior founding father of Singapore, Lee Kuan Yew, said that perhaps air conditioning was the most important invention that made it possible to focus on serious policymaking. We know that conditioners contribute to carbon generation. However, for Singapore leaders in the tropics, focusing on state matters is extremely hard when temperatures rise over 30°C in a humid location, worsening the corporal sensation. Imagine intellectual work under heat conditions, how school children learn, or how professors teach. Heat is a global phenomenon, but cities can contribute to cooling them down. Eleni Myrivili[11], the United Nations Human Settlement Programme (UN-Habitat[12]) chief UN heat officer, describes what urban areas can do to adapt to extreme temperatures: Awareness, so people and institutions make hot weather a priority; Being prepared, so vulnerable groups are safe and, Rebuilding cities, adding green spaces and water, and taking away space from cars.

An 'Urban Heat Island' (UHI) effect occurs when cities replace natural land with pavement, concrete, and buildings, so the concentration of human-made sites retains heat and increases energy consumption. Steve Chu, a former US Secretary of Energy and Nobel Prize, said that making white-colored pedestrian roads and pavement was like taking our cars off the road for 11 years to combat the heat so buildings can use 10 or 15 percent less electricity for air-conditioning if white-colored; this is a low-cost action that cities can easily implement.

But heat in cities is only one of the critical issues. As cities grow, improper urban planning conspires against human settlements, becoming another existential threat. The 15-minute city is an important concept to look at.

Compacting Cities

Urban Planning is the essence of cities. The infrastructure that contains transport networks, housing, jobs, and cultural life is where most people live their daily lives. Urban settlements also have nonphysical assets that explain their performance, such as efficient laws and regulations for construction or to recover benefits by land-value capture, which may efficiently finance rebuilding and retrofitting.

Let's start with a micro view of cities. Carlos Moreno[13], a Colombian-French urbanist and professor at Sorbonne University in Paris, is known for contributing to the "Ville du quart d'heure", or the '15-minute city' concept. The idea is simple: all services must be reachable in the neighborhood based on proximity and accessibility in 15 minutes to improve the quality of life for residents. See an academic paper[14] coauthored by Moreno where decarbonization policies can also be achieved by the concept that production and consumption are decentralized at a local level. Moreno became a scientific advisor to Paris's Mayor, Anne Hidalgo. Paris, already a well-planned city, is expanding bicycle roads, widening pedestrian zones, enhancing green spaces, and improving transport networks.

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[10] Goodell (2023) "The Heat Will Kill You First: Life and Death on a Scorched Planet" Little, Brown and Company, US. [11] The Guardian 29 July 2023 [link]
[12] UN-Habitat website [link]
[13] Carlos Moreno Wikipedia [link]
[14] Moreno et. al. "The '15-Minute City' concept can shape a net-zero urban future" Humanities and Social Sciences Communications volume 9, Article number: 126 (2022), Nature. [link]

Dozens of cities across the world are already adopting the concept.

The ideal neighborhood and convenient place to live can be traced to even medieval castles, where all services were contained in a fortress area protected by walls; the primary concern, however, was to protect the city against external attacks rather than the convenience for people.

One of the most influential urban planners in the contemporary era was Jane Jacobs[15], the American-Canadian author who advocated for the right to the city, proposing diversity as central to urban life and becoming an almost ideologue for urban renewal and city dwellers. In his famous "The Life and Death of Great American Cities,"[16] Jacobs defended the existence of mixed-used neighborhoods and walkable streets.

Source: City of Paris website [link][17]

Walking across New York and looking up the houses, streets, green zones, and blocks brings Jacobs to life and reminds of her fierce opposition to the almost 'mathematical' concepts of Le Corbusier, the Swiss urban planner who proposed ample standard avenues and tall buildings. New York is Jane Jacobs, while Le Corbusier is Chandigarh and Brasilia, in the latter, as Le Corbusier's modernism influenced Brazilian architects Lucio Costa and Oscar Niemeyer.

The 15-minute city has a simile in the 'compact city,' a concept proposed by OECD[18] in which proximity is not defined by walkable distance but by transport systems that get closer services and jobs. Managing density and proximity allows the population to live more comfortably, as distance in cities is physical and is affected by transport mediums. Promoting mixed land use in towns is combined with urban sustainability policies and green growth.

The French economist Alain Bertaud, former World Bank specialist and author of the influential "Order Without Design: How Markets Shape Cities,"[19] says that the 15-minute city functions in Paris for education and consumption but not for jobs. The daily commute of more than 55% of Parisians exceeds 30 minutes. This number from 2011 seems to have improved in European Cities,[20] where the average in 2019 was 25 minutes, but in major cities worldwide, commuting time may even exceed one hour one way.

Cities are also very different in high-income countries rather than in developing countries. In urban settlements in Africa and Latin America, informal areas may account for up to 60 percent of the city's population. A lack of formal jobs and productive activities causes informality. Over there, the concepts of heat or proximity acquire a new dimension, the productive capacity of the city to be a productive engine.

Productive Cities

Cities like historical empires or large corporations go through cycles. But Jared Diamond poses an extreme example about the collapse of the Eastern Island[21] (Chile, more than 2000 km from continental Latin America) that deforestation affected the microclimate, leading to resource depletion, making recovery irreversible; imagine, says Diamond, if Eastern Island is the Earth, a tiny planet orbiting the space, and we damage it until it is irreparable.

City leaders in developing countries want to prioritize jobs, bring prosperity and resources to provide services, and dynamize the economy. Jobs are not only a utilitarian goal but a necessary raison d'être as a city only exists when it fulfills its role vis-à-vis the

[15] Jane Jacobs Wikipedia [link]
[16] Jacobs (1961) "The Death and Life of Great American Cities", Random House, US.
[17] City of Paris website [link]
[18] OECD 2012 Compact Cities Comparative Assessment [link]
[19] Bertaud (2020) Order without Design: How Markets Shape Cities" MIT Press, US
[20] Eurostat "Majority commuted less than 30 minutes in 2019" [link]
[21] Diamond (2005) "Collapse: How Societies Choose to Fail or Succeed", Viking Press, US.

regional or global economy. Productive activities include manufacturing, services, or modern digital platforms, providing wealth and security against economic, political, or environmental changes. A city with more productive capabilities and skills possesses more resources and can overcome crises, renew, and flourish.

In the interlinked world of today, no city is condemned to disappear. It depends on the flexibility that it has and the leadership it exhibits. Country leadership and city dynamism are vital, with diversity and capabilities being significant assets. How do we quantify them? Harvard University's Growth Lab provides an Atlas of Economic Complexity[22]; The United Nations Conference on Trade and Development, UNCTAD, provides the Productive Capacity Index[23], and UNIDO produces and Manufacturing Value Added[24] statistics.

On cities vs. countries, McKinsey Global Institute has recently launched the report "Pixels of Progress: How a microregional perspective can inform your strategy,[25]" where a granular look is taken into cities to identify sources of growth and innovation. More than 40,000 microregions are covered, finding that cities may overcome their host country in growth rates.

Cities require intertwined capacities: productive capacities to fight heat; heat is mitigated by compactness by saving on energy; productivity and complexity create businesses and dynamize the economy, and ultimately, a good local economy allows for production circularity, and all those with good urban planning creates the resources to finance urban innovation. But an alert is needed as paying for cooling, compacting, and producing is expensive and is not just the responsibility of local governments, which have limited capacities. Global and national efforts are needed to close a virtuous circle, with industrial policies at the center.

New Industrial (Green and Inclusive) Policies

Industrial policies are here again, with space for central governments and cities to be in the driving seat. These are called productive transformation, green growth, or simply industrial policies. Two primary considerations are that today, new industrial policies must be (i) national and local and (ii) embedded into energy and climate policies. Modern industrial policies are not just 'import substitution' but need to be inclusive and articulated in the context of green transition and climate change.

Since the world has moved from the 'Washington Consensus' to one of 'Geopolitical Frictions,' some high-income countries that, until recent years, were reluctant to discuss industrial policy are now openly implementing massive economic packages to advance national industrial development. The US government has the Inflation Reduction Act (IRA), the Creating Helpful Incentives to Produce Semiconductors and Science (CHIPS) Act, and the Infrastructure Investment and Jobs (IIJ) Act. The European Union has a post-COVID programme to support semiconductors, batteries, and climate adaptation production. Brazil has announced a new industrial policy for South-South cooperation. Japan is preparing vast subsidies to help their country's champions in industrial sectors. Similar trends are emerging in different parts of the world.

Even an International Monetary Fund (IMF) economist, Ruchir Agarwal[26], proposes creating industrial champions as part of growth strategies in high-income countries. Until very recently, 'picking winners' or subsidizing 'national champions' was considered a neoliberal industrial policy taboo. Remember that China promotes this path as a policy with public and private champions hybrids. Industrial policies have been implemented in Japan and the East Asian economies since the last century's second half. But this is a different time. In this new era, industrial policies must respond to global societal challenges, and new development opportunities may benefit the developing world. Ricardo Hausmann, a professor at Harvard University, says[27] that countries such as Bolivia, Chile, the Democratic Republic of the Congo, Egypt, Morocco, and Namibia may

[22] Growth Lab, Atlas of Economic Complexity, Harvard University [link]
[23] UNCTAD (2023) Productive Capacity Index [link]
[24] UNIDO (2023) Statistics [link]
[25] McKinsey Global Institute (2023) "Pixels of Progress" [link]
[26] Agarwal (2023), "Industrial Policy and the Growth Strategy Dilemma" International Monetary Fund [link]
[27] Hausmann (2023) "The Supply Side of Decarbonization" Project Syndicate [link]

benefit from developing wind and solar energy as energy-intensive industries will move to low-cost places with sufficient sunshine. Since hydrogen energy is difficult to transport, production facilities are also expected to move to developing countries, redesigning global value chains and production networks.

Development banks and governments are slowly but firmly moving ahead. The Interamerican Development Bank has approved a $400 US million loan to Chile to develop green hydrogen, and most of the facilities will be in the northern desert of Atacama. And since, compared to oil, hydrogen is hard to transport, production facilities are expected to start moving overseas where land and sunshine are available. The African Development Bank is refining a business model to support green growth. The World Bank is implementing its "Scaling Up to Phase Down"[28] to offer developing countries a feasible path for sustainable energy. Nevertheless, these initiatives must be accelerated further, as the UN Secretary-General has called[29] for a radical transformation of the global financial system to face global challenges.

In Asia[30], companies are entering the hydrogen market, with trading companies and governments supporting large initiatives. New sustainability trends may benefit Latin America[31] and Africa[32], reassigning global energy supply and bringing opportunities to commodities producers. What is the place of cities and industrial policies in this new scenario?

Back to Cities

In the early nineties, when the influential Swedish sociologist Saskia Sassen published "The Global City[33]," cities received partial attention as the world was catching up with territories and local development. Climate change was not a mainstream topic, and transnational production and finance were the day's features. Today, a list of emerging cities[34] brings Miami, Dubai, and Singapore to the fore, or, based on population[35], Delhi, Shanghai, Dhaka, Kinshasa, Chongqing, Lahore, Bangalore, Lagos, Cairo, and Beijing. Cities are at the center stage in studies, policies, and rankings.

Indeed, defining an ideal city is hard. Policies for cities are always multivariable, with numerous factors interlinked and all affecting each other. That is why policymaking for cities is incrementalist rather than perfectionism, pragmatic rather than ideal, and where the possible is better than the desirable. On productive policies, nevertheless, UNIDO[36] provides examples of industrial policies that can be reviewed for reference. Advancing in industrial policies, as defined by manufacturing, services, and digital platforms, are self-reinforcing with finance and innovation, creating resources for host cities and countries and spurring startups and entrepreneurship. Thriving cities today have in common that industry is strong, has a vibrant entrepreneurial scene, and innovative clusters of organizations and people.

We see this in cities in high-income countries such as New York, London, Tokyo, Paris, Munich, Barcelona, Toronto, and many others. Dubai is becoming a central hub for finance, Singapore is a significant global corporate hub in Asia, Miami is a major spot for the US and Latin America, and Vienna is one of the most livable cities. In the global South, cities that integrate environment, urban planning, and productive policies are multiplying. We see Nairobi, San Jose, Montevideo, Medellin, Cape Town, several Chinese cities like Shenzhen, Chengdu and Shanghai, and dozens of others worldwide.

So, welcome back productive policies, with cities and central governments collectively working on actions for the 21st century. In a world where heat and urbanization are factors of our existence, those threats must be integrated with productive capacities to balance sustainable growth with development and contribute to global prosperity.

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[28] World Bank (2023) [link]
[29] UN (2023) UN Secretary-General calls for radical transformation of global financial system to tackle pressing global challenges [link]
[30] Nikkei Asia, 22 December 2022 "Green hydrogen booms in Asia as companies rush into projects".
[31] The Economist 8 August 2023 "Latin America could become this century's commodity superpower"
[32] UNCTAD (2023) "Economic Development in Africa Report" [link]
[33] Sassen (1991) "The Global City: New York, London, Tokyo" Princeton University Press, US.
[34] Portes & Armony (2022) "Emerging Global Cities: Origin, Structure, and Significance", Columbia University Press, US.
[35] UNDESA (2023) Department of Economic and Social Affairs, Population Division [link]
[36] UNIDO, Open Data Platform [link]

Marco Kamiya
UNIDO

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Marco Kamiya was the Chief of the Urban Economy and Finance Branch at UN-HABITAT in Nairobi, Kenya. Previously a senior officer at CAF Development Bank for Latin America in Caracas, and the Inter-American Development Bank in Washington DC, and senior economist of PADECO Co., Ltd., in Tokyo.

He studied International Development at Harvard University (MPA-ID) and possesses a PhD in Economics.

Münster, Germany | Münster – Climate neutral by 2030

Markus Lewe
Mayor of City of Münster

Münster has set itself ambitious goals with its strategy for climate neutrality in 2030 and was selected last year as one of the “100 Climate Neutral and Smart Cities by 2030” in the EU Mission. The motivation of the City of Münster is therefore multi-faceted: First of all the city acts out of economic considerations and for the incentive to shape a liveable city for and with its citizens. Furthermore, Münster strives for social and global responsibility and acts out of conviction. Münster and its citizens are playing a pioneering role and driving climate neutrality forward in positive competition with other cities. At the same time, Münster seeks for international cooperation with other cities like Monastir, Enschede or Rochester to face this global challenge and learn from each other.

Working on climate neutrality means not only significantly intensifying existing climate protection efforts and making greater use of new technologies, but also initiating a process of thought and action in the urban society in order to implement a sustainable lifestyle even more effectively. Thanks to the comprehensive climate protection efforts of recent years and a good decentralized energy supply, the specific CO2 emissions of 5.7 t/year per inhabitant (2021) are far below the national average. Münster therefore seems to be on the right track. However, Münster is a prospering city with a growing population and positive economic development. This creates particular challenges for achieving climate neutrality by 2030.

Climate protection has a long tradition in Münster, and we have been active on many levels for several years. The efforts in the area of private households continue to focus on the energy-efficient renovation of existing buildings in order to reduce the heat demand from fossil fuels. This will require a rapid increase in the renovation rate from 2% to 8% per year. High priority is given to expanding the share of district heating in private households and expanding the use of decentralised renewable energy systems for heat and power generation. In addition, energy-efficient new buildings play a crucial role in the coming years, as otherwise the planned construction of around 2,000 new residential units per year will lead to a massive increase in final energy consumption. Another important area is general consumer behaviour. Climate-friendly behaviour is initiated and encouraged by measures such as the urban participatory campaign "Our Climate 2030" or projects such as the "Living Lab for Climate-friendly Decisions". Simple recommendations for action lead to changes in behaviour in everyday life, supported by the municipal energy and environmental advisory services for citizens and accompanying specialist events.

Some other specific examples:

- Electrification of the bus fleet of the City of Münster: Since 2018, the municipal utility (Stadtwerke Münster) has been gradually converting its bus fleet to electric buses. Currently (August 2023), the utility has 38 electric buses and by the end of 2023, it will have 78 electric buses. By the end of 2029, the entire fleet of more than 120 buses is supposed to be converted into an electric fleet. In addition, the municipal utility is expanding the corresponding charging infrastructure.

- Low-energy house standard in land purchase contracts and urban development contracts: Since 1997, the City of Münster has been implementing the low-energy house standard in land purchase contracts and urban development contracts for residential and non-residential buildings. The standard has been continuously tightened in the process. Finally, in 2021, the so-called KfW 40 efficiency house standard was defined,

including an obligation to install a solar power unit.

- Solar obligation for new residential buildings: For new residential buildings in Münster, the City Council (2021) has decided that the installation of a photovoltaic system is mandatory with a minimum output of 1-kilowatt peak per residential unit. The obligation also applies to existing buildings in the event of fundamental roof renovation. The obligation to install a solar energy system (photovoltaic or solar thermal) has also been made mandatory for new non-residential buildings.

- Municipal buildings to become climate-neutral: The existing building guidelines for municipal buildings have been fundamentally revised and adapted to the goal of climate neutrality by 2030. The guidelines now include binding criteria for all those involved in the construction of municipal buildings, both for new buildings and for conversion and refurbishment measures. This means that new buildings must be built in a climate-neutral way.

- “Bicycle Streets 2.0": Münster is known as the “Bicycle City of Germany”. The City of Münster is continuing to invest in its cycling infrastructure in order to make traffic and mobility more sustainable and compatible in the future and to achieve climate neutrality by 2030. The more attractive and significantly upgraded bicycle infrastructure will provide a consistently comfortable and fast alternative to motorised vehicle use, further enhancing the quality of life in the city. The project sets new standards and qualities for cycling. Nine bicycle lanes with a total length of 5.5 km have already been upgraded to the new quality standards.

- Funding programme “City of Münster climate-friendly residential buildings": Since 1996, the City of Münster funds a wide range of measures to optimise the energy efficiency of residential buildings in the city area. From insulating facades and roofs insulation with ecological materials to replacing heating system and installing photovoltaic systems, there are many ways to make an important contribution to reducing CO2 emissions in Münster. Since 1998, about 13 million Euros have been granted to citizens and more than 3,000 buildings have been renovated. This has been an important step in reducing CO2 emissions in the city (approx. 25,000t).

- Thermographic flight of the city in 2021: The aim of the project is to advise building owners on options for energy savings and to support them in retrofitting their buildings. Using thermographic images (thermal images), it is possible to determine which buildings should be retrofitted to reduce energy consumption and heating costs in the long term. This helps to identify heat losses through uninsulated or poorly insulated building roofs,that would otherwise go undetected. Since January 2022, all building owners have received their personal access to the thermal image of their property with an interpretation aid. The City of Münster also offers a free introductory energy consultation. Additionally Münster is improving its geothermal cadastre from 2-dimensional to a 3d-seismic-model. "Münster's Alliance for Climate Protection - the network of companies" was founded in 2011 in order to counter the increase in electricity and heat demand in the commercial sector and to achieve reductions in energy consumption. By now, more than 100 companies are participating. It is also aimed at small and medium-sized enterprises that have not yet dealt in depth with the issues of energy consumption and climate protection. They are encouraged and supported in implementing measures to increase energy efficiency in the company within the framework of the "Energy Efficiency Start-up Advice".

In addition to urban development projects, Münster also plays an important role in the

field of climate-related research. With the research and development facility of the Fraunhofer-Einrichtung Forschungsfertigung Batteriezelle FFB the City of Münster is transforming into an international and nationwide innovation centre for batteries research along the whole value chain. This leads to numerous high-tech cooperations.

Markus Lewe
Mayor of City of Münster

Mayor Markus Lewe was appointed First Mayor of Münster, Germany in 2009 and re-elected in 2015 and 2020. He leads the municipal administration, acting as the City Council's speaker and representing the City of Münster.

In May 2023, Markus Lewe commenced his third term as President of the Association of German Cities, a position he previously held since November 2021 and from January 2018 to June 2019.

After graduating in public administration, Markus Lewe began his career as an advisor to the Regional Association of Westphalia-Lippe (LWL). From 1997 to 2009, he served in the General Vicariate of the Bishop of Münster and was elected Deputy Mayor for the southeastern district of Münster in 1999, before taking on the role of First Mayor of Münster as his primary responsibility.

UN-Habitat | A Collective Call to Unite for Global Urban Resilience in the Face of Climate Change

Mr. Rafael Tuts
Director, Global Solutions Division, UN-Habitat

In an era defined by climate uncertainty, the stage is set for cities to take center stage in the battle for a sustainable future. Recent catastrophes such as heatwaves, raging wildfires, destructive floods and landslides, and devastating cyclones serve as a stark reminder that the impacts of climate change are far-reaching, underscoring underscore the urgent need for global cooperation. This is not merely a regional issue; it's a global crisis that requires a collaborative effort that transcends borders. As we stand at this crossroads, Sustainable Development Goal 11 comes into sharp focus, guiding us toward making our cities inclusive, safe, resilient, and sustainable.

A Global Challenge: The Nexus of Urbanization and Climate Change

The aftermath of Cyclone Freddy in Malawi and Mozambique, along with the trail of destruction left by Cyclone Mocha in Myanmar and parts of Bangladesh, bears testimony to the global consequences of extreme weather events. Over 2 million lives were disrupted, 600 lives were lost, and the economic toll exceeded $140 million. There is also a considerable financial toll; for instance, the United States has experienced 15 extreme weather events in 2023 alone, collectively costing over $1 billion. The message is clear: this isn't a localized issue, but a global and persistent problem.

Urbanization is an irreversible global phenomenon. More than half of the world's population currently resides in urban areas, and this trend is set to continue. By 2050, an additional 2.5 billion people are expected to call cities home, raising the urban population share to 68%. Yet, these urban centers, accounting for only 2% of the Earth's landmass, consume nearly three-quarter of energy, contributing to 70% of greenhouse gas emissions. With 70% of urban areas being impacted by climate change, the vulnerability of cities to flooding, storms, and extreme temperatures cannot be ignored. The reality is stark: the urban poor, often residing in informal settlements, bear the brunt of climate impacts.

Embracing Sustainable Development Goal 11: Resilient and Inclusive Cities

Sustainable Development Goal 11 beckons us to rethink our approach to urbanization. It calls for cities that prioritize resilience, sustainability, and inclusivity. Urbanization is growing at a quick rate in Africa where I am based. The urban population is projected to reach 50% of the total by 2035, so the urgency to build resilient cities that are ready for the future cannot be overstated. Astonishingly, despite African cities being home to over 600 million people, they receive less attention in global climate discourse.

In the face of this challenge, the UN-Habitat Assembly held in June 2023, passed key resolutions reaffirming UN-Habitat’s role as focal point for sustainable urbanization and human settlements, including resolutions the interlinkages between urbanization and climate change, smart cities, informal settlements, and biodiversity, among others. The resolutions underscore the importance of multilevel climate action, and the pivotal role of cities and local government in achieving the goals of the Paris Agreement. In addition, it highlights the urgent need for multilevel climate action. As such, UN-Habitat serves as a unifying force, harnessing the collective will to address urban resilience in the face of climate change.

Partnerships, like the collaboration between UN-Habitat, UNDP and the African Union Commission (AUC) highlight the path to resilient urban development and paves the way to effectively implement the Africa Urban Resilience Programme (AURP) of the African Union. In addition, Kenya is leading an initiative on Building Climate Resilience for the Urban Poor

(BCRUP) to support the resilience perspective for the more than 54% of urban population living in informal settlements in Africa. Such efforts, and others being implemented by a wider community of UN, academic and civil society partners, are supporting the implementation of SDG 11 with a focus on climate action in cities, and in turn also contributing to achieving SDG 13.

Roadmap to COP28: Converging Conversations for Global Resilience

The events leading up to COP28, including the Africa Climate Summit and Africa Climate Week, Bridge for Cities, and the United Nations General Assembly serve as pivotal junctures on the journey toward achieving global climate goals. These gatherings are more than meetings; they are hubs of innovation and knowledge exchange, facilitating connections and the sharing of solutions to enhance urban resilience. These platforms bring together local and regional stakeholders, fostering a united global approach to the global climate crisis.

COP28, taking place this year in Dubai, serves as a pivotal platform where urgent climate conversations worldwide converge. December 6 assumes a special significance as a day dedicated to Multilevel Action, Urbanization, Built Environment, and Transport. On this day, the COP28 Presidency, supported by UN-Habitat is co-convening the second Ministerial Meeting on Urbanization and Climate Change. Building on the successful outcomes of the first-ever meeting at COP27, the upcoming Ministerial Meeting will focus on how to accelerate local climate finance by facilitating a dialogue between Ministers of Housing, Urban Development, Environment and Finance as well as local and regional governments, multilateral banks, and other non-state actors. The objective of the meeting is twofold: Firstly, to reinforce the importance of multi-level climate action to achieve the targets of the Paris Agreement. Secondly, to discuss how we can accelerate local climate finance to facilitate and how local governments can be better equipped to respond to the climate crisis.

This meeting seeks to both inspire and accelerate local climate action by showcasing concrete examples, while also reinforcing the importance of multi-level climate action to achieve the targets of the Paris Agreement.

Uniting for a Resilient Future

In conclusion, as we embark on the journey toward global urban resilience, collaboration must take centre stage. This is not the time for individual efforts; it's a moment for collective progress. The focus must be on scaling up climate action through strategic partnerships, innovative solutions, and shared goals. The resilience of cities, particularly for the urban poor, hinges on our ability to turn commitments into tangible outcomes.

In the call for urban resilience, the challenge is daunting, yet the path forward is clear. Let us unite as a global community, transcending boundaries, to shape a future where cities stand strong against the climate crisis. The urgency of this moment cannot be understated—our shared destiny rests on our collective actions today.

Mr. Rafael Tuts
Director, Global Solutions Division, UN-Habitat

Raf Tuts is the Director of the Global Solutions Division at UN-Habitat, based in Nairobi, Kenya. With over 25 years of experience, he has held various key positions within UN-Habitat, contributing significantly to the organization's initiatives. Raf has been instrumental in shaping normative guidelines for sustainable urbanization and has led efforts to study city responses to the COVID-19 pandemic. He played a vital role in formulating the Sustainable Development Goals and was honored with the title of Honorary Professor by the University of Leuven, Belgium, in recognition of his dedication to urban development.

Phnom Penh, Cambodia | Carbon emissions reduction strategies by 2050

Mr. MEAN CHANYADA
Vice Governor of Phnom Penh Capital City

Achieving an environmentally sustainable construction sector in Cambodia has been a challenge to date due to the limited regulations and policies focusing on green buildings and limited sustainable construction knowledge among property developers and architect firms. Cambodia's policy on the matter outlines specific emission reduction targets within the construction sector: for example, a commitment to reducing brick production emissions by 44 per cent (1.799 million tons of CO2 equivalent) by 2030, public awareness campaigns, and new building codes, enforcement, and certification for new buildings. The Ministry of Land Management, Urban Planning and Construction Cambodia with UNDP and the Global ABC also developed an 'NDC Roadmap for Low-Carbon, Climate Resilient Buildings and Construction' outlining priority action to increase the scale, pace and impact of climate action towards a zero-emission, energy-efficient and resilient buildings and construction sector.

Almost 37% of global CO2 emissions have been contributed by building and construction sectors. Having understood that building is a primary source of emissions, it is critical to emphasize that the construction sector is a priority for low-emissions development, and the sustainable transition of the build environment will contribute to combating climate change in Cambodia, some 70% of urban infrastructure that will be needed to accommodate a fast- growing world is yet to be built.[37]

According to the Cambodia's Long-Term Strategy for Carbon Neutrality, urban transportation will become more widespread and electric vehicle penetration will grow in the passenger vehicle fleet. Investment in rail development will start after 2030 Emissions will start after 2023. Emissions will be also reduced by more moderate use of electric vehicles, increased fuel efficiency for internal combustion engine vehicles and higher penetration of compressed natural gas (CNG) for interregional buses and for trucks. Under the LTS4CN scenario, 70 percent of motorcycles and 40 percent of cars and urban buses are expected to be electric vehicles by 2050.[38]

In Cambodia, the cooling sector consumed a total of 4,738 gigawatt-hours (GWh) of electricity in 2020, and this is expected to nearly double to 8,944 GWh11 by 2040 in the absence of significant action towards sustainable cooling. National refrigerant consumption for all cooling sectors totaled 1,226 Metric tons (Mt) in 2020 and is based on products with high GWP as well as some ozone-depleting substances, such as hydrofluorocarbons (HFCs) and hydro chlorofluorocarbons (HCFCs). The annual GDP loss due to heat stress in Cambodia is in the range of an estimated US$1.12 billion to $1.26 billion, and the loss of crops and produce from broken links or a lack of infrastructure in the food cold chain is significant. The cooling sector contributed 6.27 million tons of carbon dioxide (CO2) equivalent emissions in 2020. Moreover, space cooling in buildings was responsible for 37 per cent of total cooling sector emissions, followed by mobile air conditioning at 30 per cent and process cooling at 27 per cent. Total cooling emissions are expected to increase 1.8 times by 2030 and 2.7 times by 2040 from 2020 levels.

In 2022, the Cambodia's National Cooling Action Plan (NCAP) established to pave the way for a transition towards climate-friendly cooling by reducing cooling demand, improving the energy efficiency of appliances and promoting low-GWP refrigerants to help reduce GHG emissions. This roadmap focuses on five main areas: 1) Building Space Cooling, 2) Food Cold Chain, 3) Health care Cold Chain, 4) Mobile Air Conditioning, and 5) Process

[37] Source: 2021 Buildings GRS
[38] Source: Long-Term Strategy for Cambodia Neutrality

Cooling. The interventions under the NCAP are divided into three main periods: the short term (5 years), medium term (10 years), and long term (20 years).[39]

Ministry of Land Management, Urban Planning and Construction to prepare an NDC Buildings and Construction Roadmap for Cambodia to increase the scale, pace and impact of climate action towards a zero-emission, energy-efficient and resilient buildings and construction sector. In this regard, the country is developing a green standard for new buildings supported by capacity-building programmes for buildings professionals and the public.

Building are one of the six sectors which can collectively cut carbon emissions to limited temperature rise to 1.5 °C. The integration of green building concept into Cambodia's construction sector through sustainable city concept including site section, energy efficiency, water efficiency, construction and material as the national green building system and ending with behaviour and decision toward the green building. Through the collaboration between the Department of Green Economy of NCSD, Ministry of Environment (MoE) Cambodia, the **Green City Strategic Plan for Phnom Penh 2017-2026 adopted** to deal with economic and natural disaster issue including the natural flood control and wastewater management systems in the city. Then, **Phnom Penh Sustainable Plan 2018-2030** adopted to strengthen the strategic plan in the city. Recently, **the Sustainable Strategic Plan 2020-2030 for Seven Secondary Cities** adopted to aims to promote green growth of strategically important secondary cities in Cambodia, selected as priority cities for green city development by the national government. The seven selected cities represent three city clusters: the coastal region (Sihanoukville and Kep), plain region (Kampong Cham, Suong, and Bavet), and Tonle Sap Lake region (Siem Reap and Battambang). In 2023, the **Environmental and Natural Resources (ENR) Code promulgated** which will be one of Cambodia's longest laws breaking new ground in a large variety of areas and would provide higher levels of reducing carbon emission and environmental protection, openness and accountability than is the case with virtually all of Cambodia's existing laws.[40]

To encourage sustainable development, Phnom Penh has been investing in projects of various sizes in accordance with the city's financial resources: By (a) expanding the amount of green space, (b) investing in energy-saving projects, such as smart lighting for cities, and (c) working with many stakeholders, the community's socioeconomic and living conditions would be strengthened. Coordinating urban-level planning, investment strategies, and options while taking into account the city's constrained financial capacity and development priorities is a critical problem in realizing the low-carbon vision.

[39] Source: The Cambodia's National Cooling Action Plan, 2022
[40] Source: 2022, Roadmap for Energy-Efficient Buildings and Construction in ASEAN

Mr. MEAN CHANYADA
Vice Governor of Phnom Penh Capital City

H.E. MR. MEAN CHANYADA has currently served his terms in office at the Phnom Penh Capital City since 2013. He has responsibility and participated in community concerns in order to construct and strengthen infrastructure, safety, security, and public order as well as to encourage individuals to keep all of their accomplishments as their own. He has made significant and successful contributions to addressing the impact assessment of urban growth in areas such as compensation work, resettlement, involving and negotiating with individuals who are effective in the development area, and public order management.

Mr. CHANYADA holds a bachelor's in Health and Science from University of Health Sciences and a master of Health from University of Health in Japan.

Rayong, Thailand | The Road to Sustainability

Mr. Phusit Chaicham
Deputy Mayor of Rayong, Thailand

The road to sustainability requires creative solutions that go beyond conventional limitations in a time when climate worries are intensifying. Cities have become the focal point of both potential and problems in the battle against climate change as the world urbanizes at an unprecedented rate. The Rayong City Municipality is intended to be a forerunner in this contention, demonstrating how urban innovation can be an avenue of inspiration for driving climate action.

The vibrant province of Rayong, which is a part of Thailand's Eastern Economic Corridor, has long been known for its industrial prowess. However, this legacy of industrialization itself can be used to spark revolutionary transformation. Rayong's journey towards a resilient and low-carbon future could be completely changed through urban innovation, which is the intentional integration of technology, stakeholder cooperation, and sustainable practices within urban ecosystems.

With the community's first in mind, the municipality aims to transform the city into a smart and livable city. Smart infrastructure is the primality pillar of urban innovation. By incorporating intelligent solutions that enhance resource use, waste management, mobility & traffic management, and energy consumption, the municipality of Rayong City can outpace traditional urban planning. To minimize energy waste, lower greenhouse gas emissions, and improve resource efficiency, sensors and data analytics can be used together. These infrastructural developments, which range from smart grids that use renewable energy sources to effective public transportation systems, reflect Rayong's dedication to sustainable urban growth.

The promotion of green spaces and environmentally friendly buildings is equally essential. The thoughtful integration of green rooftops, vertical gardens, and pedestrian-friendly streets is necessary for Rayong to become an urban sanctuary. These actions not only increase the aesthetic appeal of the city but also reduce the urban heat island effect, promote air quality, and give urban residents places to unwind and relax. The municipality may provide an excellent example for other communities to follow by requiring sustainable construction materials and techniques, such as energy-efficient buildings and the integration of renewable energy sources.

The city could accelerate climate action by encouraging environmentally efficient transportation. The city may encourage the private sector to invest in public transportation systems like light rail and electric buses including the last mile solution ecosystems. More routes for bicyclists and pedestrians could also be built. The usage of electric cars and other low-carbon modes of transportation may also be promoted by the municipality.

Rayong City might accelerate climate action by protecting its natural environment. Mangrove forests found right in the middle of the city. These ecosystems are crucial for absorbing carbon dioxide and protecting coastal communities from the effects of climate change. All interested parties could contribute to conservation and replanting efforts to protect the area's natural ecology.

Urban innovation is fundamentally based on collaboration between the public and private sectors, academics, and the community. A common vision for a sustainable Rayong must guide decisions about public policy, research projects, and citizen involvement programs. Innovative solutions to regional problems, such as waste management initiatives and plans for contending with climate change, can

be nurtured on collaborative platforms. Such collaborations ensure that addressing climate change is a shared community effort that resonates in every resident's heart, rather than merely a government directive.

Financial support inevitably becomes essential for turning innovation into real improvement. The municipality of Rayong City can use its advantageous location along the Eastern Economic Corridor to draw in sustainable investments. Urban innovation can be sparked by financial incentives for clean technology firms, venture funding for sustainable initiatives, and tax advantages for eco-friendly businesses. Additionally, utilizing global funding programs designated for climate change can give Rayong's transition to sustainability the boost it needs.

The Rayong City Municipality is poised to embark on a revolutionary path, to sum up. Rayong has the potential to move past its industrial past and become an influential player in sustainable urban development by embracing urban innovation as the catalyst for change. Rayong can serve as a beacon for others of nations as it searches for answers to the climate issue by demonstrating how cities may build a route towards a climate-resilient future by being innovative, resilient, and collaborative.

Now is the moment to act, and Rayong's path can encourage others to do the same.

Mr. Phusit Chaicham
Deputy Mayor of Rayong, Thailand

Phusit Chaicham is the vice mayor of Rayong city municipality, the central district of Rayong, a province in the eastern part of Thailand, one of the three provinces in Eastern Economic Corridor. At the house of municipality, Phusit takes responsibility for Strategy planning and Social welfare divisions, drives policy to take care of the people in 29 communities of the city.

Phusit has experience in founding and directing real estate development companies, hospitality businesses as well as city development firm and partly public services as member of the board of committees in several organizations.

Phusit holds Master of Engineering (Management Information System) from George Washington University, USA and multiple certificates in Real estate development & investment and Chief City Innovation courses.

Santo Domingo, Dominican Republic | Driving the Environmental Revolution: Urban Innovation in Action in East Santo Domingo

Manuel Jiménez
Mayor of Santo Domingo Este

Throughout human history, nature has experienced unprecedented climatic transformations, generating notorious variations in temperatures as a direct result of human activities. These changes have unfortunately triggered major floods, inflicting considerable damage to both property and human lives. In this context, it is essential to highlight the particular vulnerability of the municipality of Santo Domingo Este, with a population of 1.2 million inhabitants, located in an area prone to meteorological phenomena and characterized by its active tectonic geology. In addition to this, its urban development, lacking strategic planning, has given rise to human settlements in proximity to rivers and ravines, lacking adequate sanitary and storm sewage systems. It is therefore imperative to implement bold measures to adapt to climate change in this context.
The municipality also faces the challenge of fossil fuel-based transportation, thus contributing significantly to the emission of carbon dioxide into the atmosphere. In 2018, faced with the latent threat to three springs and the emblematic green lung of Parque del Este, we undertook a courageous transformation. With ingenuity and determination, the bus terminal was transformed into the Parada de la Cultura, an epicentre of innovation, art and entrepreneurship, symbolizing a renaissance in line with the vision shared by the community.

Since before assuming the mayor's office, a joint struggle was forged with citizens to preserve the natural and aquiferous space threatened by a gigantic bus terminal. This struggle culminated in the conversion of this space into the Parada de la Cultura, a beacon of creativity and progress. In addition to this iconic transformation, we have revitalized other public spaces, a significant step in the recovery of the urban fabric.

Aware of this harsh reality, the Mayor's Office of Santo Domingo East has instituted the Directorate of Environmental and Risk Management. In 2021, we achieved United Nations certification in Disaster Risk Reduction, consolidating our commitment to urban resilience. In this context, we have implemented a series of proactive measures, such as the restoration of an environmental liability in the city, transformed into the Ecological Park of the Taino Indians, a now extinct indigenous population. We have also revitalized the Ozama River Bank, one of the nation's most valuable resources, and improved the flora of the city's southern coastline. Strengthening our commitment to Agenda 2030, we have strengthened vegetation in all green areas, focusing on Sustainable Development Goal (SDG) 13 to address climate change.

The transition from fossil fuel vehicles to electric options such as the Santo Domingo metro and the cable car, as the main means of mass transportation, and the implementation of a comprehensive solid waste management system, in line with SDG 11 on sustainable communities, are challenges we aim to meet in the short term.

The essential steps to involve citizens in the fight against climate change, through the formation of strategic alliances with more than 1,200 neighbourhood councils, associations and federations, are the most expeditious way to make sustainable transformations over time in favor of our environment. We have expanded our influence towards SDG 17, focused on building global alliances. We are currently collaborating with the Ministry of Environment and Natural Resources and the United Nations Green Funds in the creation of the Local Climate Change Adaptation Plan.

Our challenge lies in empowering the population in the implementation of climate change adaptation measures, in addition to sensitizing the central government and international organizations on the importance of financing these visionary programs and projects. In the search for a sustainable and resilient future, Santo Domingo East stands as a beacon of hope and an inspiration for cities around the world.

The environmental revolution and urban renewal will only be possible if all the cities of the world, and especially those with limited resources such as Santo Domingo East, make a serious commitment to educating our children from early childhood and if the major emitting countries of carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides and hydrocarbons commit to financing environmental education projects in third world countries.

Manuel Jiménez
Mayor of Santo Domingo Este

Manuel Jiménez, born on October 15, 1952, is a prominent Dominican politician, lawyer, singer-songwriter, poet, composer, environmentalist, teacher and social activist.As member of the Modern Revolutionary Party (PRM), he became mayor of Santo Domingo East in 2020 after serving as a deputy for 14 years, from 2002 to 2016.

Jimenez studied Humanities at the Autonomous University of Santo Domingo (UASD) and obtained a Bachelor's Degree in Law at the Open University for Adults (UAPA). As a teacher in Santo Domingo, he excelled in helping young people from marginalized communities to obtain education and professional opportunities.

In his political career, he chaired the National Council of Culture and played a crucial role in the transformation of this council into the Ministry of Culture. He also authored more than 50 bills and resolutions in the National Congress, including laws that boosted the film industry and cultural patronage in the Dominican Republic.

Jiménez is known for his social and environmental activism, especially in the preservation of natural resources and the creation of protected areas. He composed the song "Miranda no se negociaciacia" in support of the defense of Loma Miranda. As mayor, he is working on the recovery of the Parque Mirador Manantiales del Cachón de la Rubia and the transformation of the Ozama River in Santo Domingo East into a tourist attraction.

In addition to his political and environmental career, Jiménez is a talented singer, guitarist, flutist and composer whose songs have been performed by international artists such as Julio Iglesias, Ana Belén and Víctor Manuel. His compositions have transcended borders and have been translated into several languages, including Mandarin Chinese, Portuguese, Danish, English and French. He is also the author of several important anthems in the Dominican Republic and the anthem of the African, Caribbean and Pacific (ACP) countries.

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