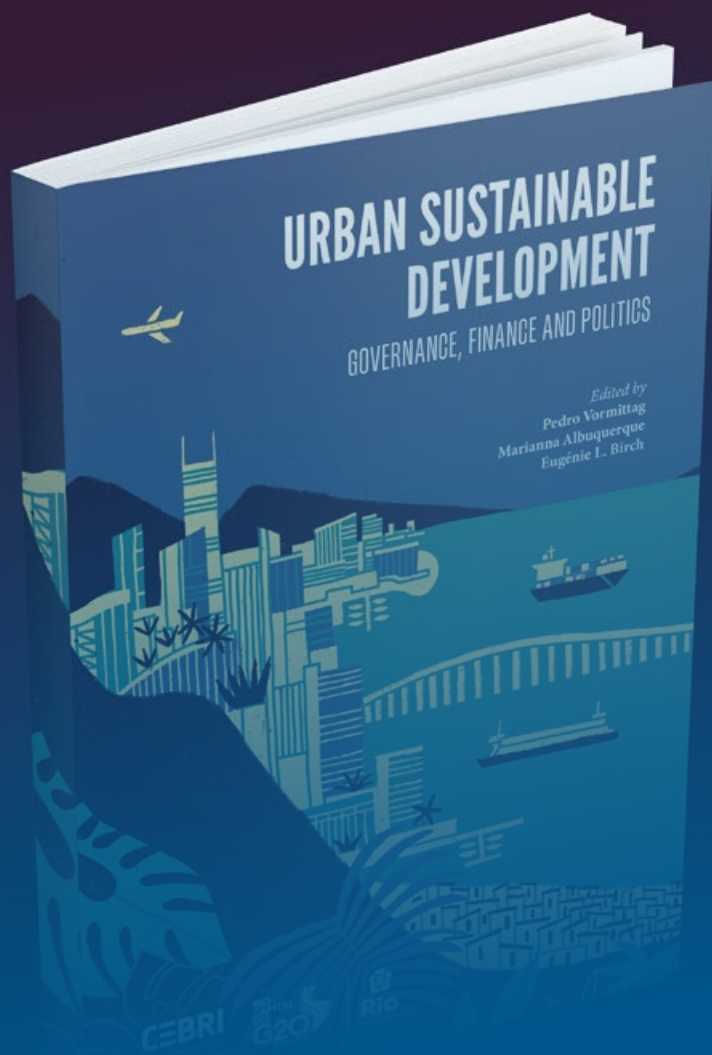


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POLICY BRIEF

# SUSTAINABLE AND PRODUCTIVE CITIES AND URBAN SUSTAINABLE DEVELOPMENT: A DEVELOPING COUNTRIES PERSPECTIVE



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 **POLICY CENTER**  
FOR THE NEW SOUTH



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## Sustainable and Productive Cities and Urban Sustainable Development: A Developing Countries Perspective

**Arkebe Oqubay**

**T**he article discusses the role of sustainable and productive cities as drivers of global transformation. Cities, as the heart of human civilizations, not only propel economic development and serve as technological and innovation hubs but also inspire hope and optimism for the future. They contribute over 80 percent of the global economy and nearly 100 percent to all scientific and technological breakthroughs. Rapid urbanization has been a primary force in the demographic shift that impacts global transformation. With their unparalleled resilience and innovation ability, cities are also at the forefront of significant global challenges, such as the COVID-19 pandemic and climate change, finding sustainable solutions. Cities are not just essential to the 2030 Agenda for Sustainable Development and the Paris Climate Agreement, endorsed by all United Nations member countries, but are the subject and primary actors in implementing

it. By recognizing the importance of making “cities and human settlements inclusive, safe, resilient and sustainable” (Goal 11), the 2030 Agenda underscores the importance and impact of cities in shaping the future.

However, in shaping global transformation, cities face significant challenges in releasing their full potential, including financial, governance, and political constraints. A G20 Summit in Rio de Janeiro led by Brasil could be instrumental in promoting city transformation and urban sustainable development as essential components of the development agenda, empowering cities to take charge of their transformation. The objectives of the paper are: (1) to present urbanization and urban transformation as a framework; (2) to explain why and how cities should strive to be not only *productive* but also *sustainable* to promote their national development strategies, to achieve Sustainable Development Goals (SDGs) and the net zero agenda; (3) to further discuss the dynamics of city transformation with a focus on Addis Ababa’s transformation as a case study; and (4) to learn from city leadership experiences. The article will explore critical questions: What specific strategies can cities implement to become productive and sustainable cities? What examples of successful city transformation and leadership experiences can be learned from? Given the urbanization wave, population growth, and the lagging structural transformation, these questions have significant implications for cities in emerging and developing economies or the Global South.

This article is enriched by the author’s over three decades of experience in development policymaking and transformation, including serving as the former mayor of Addis Ababa and former minister of urban development. This unique perspective,

combined with extensive scholarly and research work drawing from development economics, urban development, and international political economy, provides a comprehensive understanding of the issues at hand. The paper is structured into four sections covering the above mentioned themes, supplemented by an introduction and conclusion. The author's unique perspective is a critical element that makes this paper a valuable resource for understanding urban transformation.

### **Urbanization Pattern and Urban Transformation**

Economic history tells us that demographic shifts and technological advances are the two drivers of economic development. Technological advances have accelerated since the first industrial revolution in England (1850s–1950s), followed by the second and third industrial revolutions (1850s–1950s) and the ongoing fourth industrial revolution, which is characterized by green and digital transformation (which was activated after the 1950s).<sup>1</sup> The acceleration of technological advancement and innovation was propelled by population pressure. This section highlights that cities are engines of economic growth and innovation; accelerated urbanization in the twenty-first century is expected to shape developing and emerging economies; the demographic shift—shifts in population growth and median age in developing countries accompanied by aging and population decline in advanced economies. Cities have the primary role in sustainable structuring transformation.

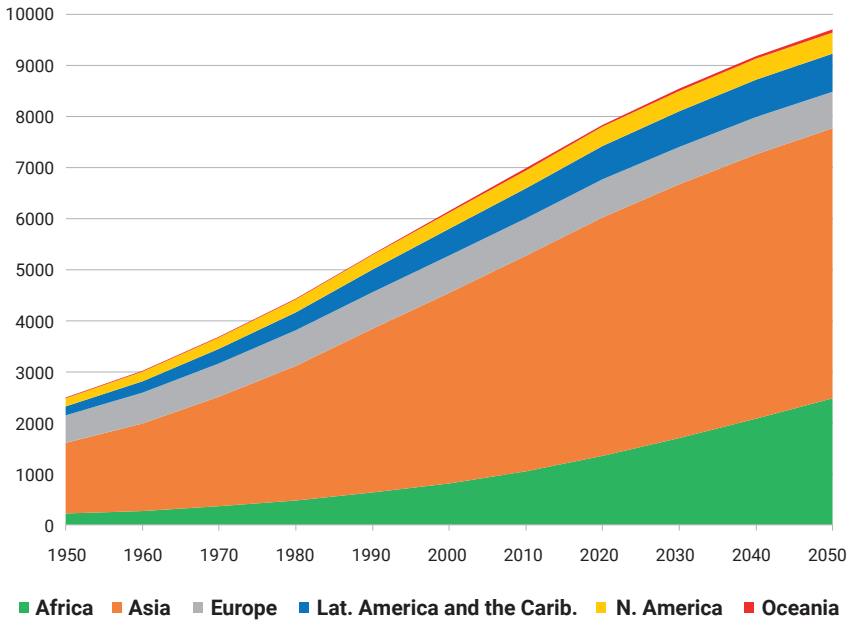
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1. Fossil fuels powered the first, second, and third industrial revolutions. The fourth industrial revolution is transitioning from fossil fuels, driven by digital and green technology breakthroughs.

## Demographic Shifts

Between 1900 and 2000, the world population increased from 1.6 billion to over 6 billion, a nearly four-fold increase in the 20th century. In this century, it is projected to hit almost 10 billion by 2050, peaking by the end of the century. Asia and Africa are the main drivers of population growth in the twentieth and twenty-first centuries. By 2000, Asia accounted for 60 percent of the world population, while Africa is expected to be the primary driver in the 21st century. Various factors, including fertility rate, public health and life expectancy, migration, and global scale events, influence the demographic shift. In addition, shifts in the age structure accompanied demographic shifts, although uneven across various regions.

Advanced economies faced an aging population while developing countries enjoyed the increase in younger populations, with Africa enjoying 20 years in contrast to Asia's 34 years and advanced economies 45 years. Asia garnered a demographic dividend in the second half of the twentieth century, when the working-age population grew faster than the dependent population, leading to increased economic productivity (UN DESA 2024). Africa will pass through this process in the twenty-first century. Africa's population will increase from 1.4 billion in 2025 to 2.5 billion by 2050, with significant implications for economic development—an increase from 1.4 billion to 2.5 billion in 2050, with a projected additional 800 million people joining the workforce with a considerable impact on job creation, the potential to emerge as hubs of productive capacity, and contributing to market growth (Best 2001; UNCTAD 2019).



**Figure 1.** World population by regions (1950–2050, millions).

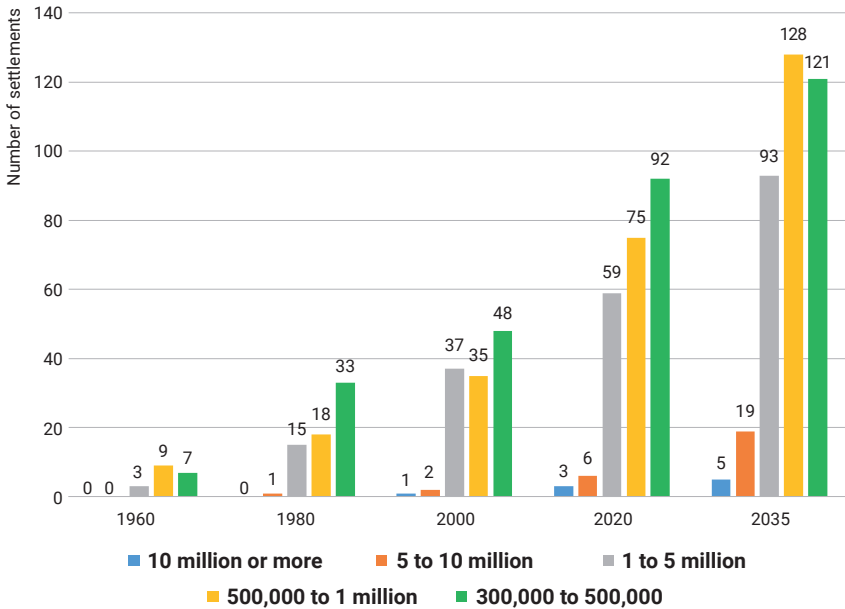
Source: Greening of African Economic Development from UN DESA data.

## Rapid Urbanization

However, from a demographic and technological development perspective, rapid urbanization and the accompanying urban transformation are fundamental drivers of global change. In 1900, the urbanization level was below 15 percent, doubling to 30 percent by 1950 and reaching nearly 58 percent in 2025. It is projected that roughly 70 percent will live in urban areas by 2050, peaking at 90 percent by 2100, witnessing a fundamental shift in human history. The pace of economic development and industrialization, population growth and age structure, technological advances, and rural-to-urban migration have influenced the rate of urbanization.

However, the level of urbanization characterizes significant unevenness among different regions. For instance, over four-fifths of people in the Americas and Europe will live in cities by 2025, while it will only reach 55 percent in Asia. Africa will be the least urbanized, reaching 45 percent. Various factors account for the variations in urbanization levels that reflect the accompanying economic growth and transformation.

Since 1960, African cities have transformed in size, urban structure, and economic contributions. In 1960, cities in the newly independent African countries accounted for 20 percent of the Gross Domestic Product (GDP), and 15 percent lived in cities. By 2000, cities' contribution to the national economy had increased to nearly 60 percent. By 2050, African cities' contribution is projected to grow to 85 percent of Africa's GDP. In 1960, only three cities had a population between 1 and 5 million; by 2020, the number had increased to 68. In the same period, the total number of cities with a population over 300,000 increased from 19 to 235 and is projected to grow to 366 in 2035, of which five are mega-cities over 10 million and 19 are metropolitan cities with 5–10 million population.



**Figure 2.** Urban settlements in Africa (1960, 1980, 2000, 2020, 2035).

Source: Greening of African Economic Development from UN DESA data.

## Agglomeration Economies and Innovation Spillovers

The historical perspective of the role of cities in economic growth captured by Paul Bairoch (1988) in *Cities and Economic Development: From the Dawn of History to the Present* highlights cities as catalysts of economic development; the Industrial Revolution as the turning point emphasizing the interconnectedness between industrialization, urbanization and role of cities; and the diverse nature of cities and the economic disparity of cities as a permanent feature.<sup>2</sup> Jane Jacob's pioneering works, *The Economy of Cities* (1969) and *Cities and the Wealth of*

2. See more: Von Thünen (1863); Hoover (1948); Le Corbusier (1929), Lefebvre (1996); Mumford (1972); Castells (1991); Henderson (1974, 2003); Glaeser (2011).



*Nations* (1984), emphasize cities where the new is created and the notion of a “productive city” and innovation hub as premier drivers of economic development, “cities are settlements where much new is added to older work and this new work multiplies and diversifies a city’s division of labor; that cities develop because of this process, not because of events outside of themselves; that cities invent and reinvent rural economic life; that developing new work is different from merely repeating and expanding efficiently the production of already existing goods and services” (1969, 122). Moreover, Jacobs underscores the interconnection and synergy between industrialization and urbanization and puts cities at the heart of structural transformation. Jacobs adds: “A country’s basic wealth is its *productive capacity*, created by the practical opportunities people have to *add new work*” (1969, 77, author’s emphasis).

Agglomeration economies are a key feature that enables cities to play a central role as they foster positive externalities and spillover, namely, *localization economies*, associated with external economies of scale generated by the concentration of firms in the same industries in the same vicinity (Marshall 1920). This process functions through the advantages brought by the pool of skilled labor, the availability of intermediate inputs and services, and the knowledge and technological spillovers, referred to as the Marshallian Trinity. Moreover, Ohlin’s *urbanization economies* generate external economies of scale across various industries and sectors in relatively large cities and urban centres (Ohlin 1933). Multiple channels of agglomeration are revealed through a combination of an organic process and policy-driven through multiple typologies of industrial hubs—industrial parks, special economic zones, and technology hubs, among the many variations influenced by the nature of sectors and national context as

comprehensively presented in Oqubay and Lin (2020) *The Oxford Handbook of Industrial Hubs and Economic Development*.<sup>3</sup>

From a development economics perspective, industrialization and exports are vital for sustained structural transformation because of the *special properties* of manufacturing, the strategic benefits of exports, and the increasing role of technological innovations. Exports play a strategic role as a source of international learning, relaxing constraints on balance-of-payments and maximizing increasing return to scale (Passinetti 1982, 1993; Thirlwall 2013). Manufacturing is an engine of growth and structural change because of: (a) strong causal relations between the growth of manufacturing output and the growth of GDP; (b) between the growth of manufacturing output and the growth of productivity; and (c) between the rates at which manufacturing expands and the growth of productivity outside the manufacturing sector (Thirlwall 2013; Kaldor 1967). From a Schumpeterian evolutionary perspective, technological change is the driver of industrial capitalism that emphasizes the vital role of innovation and production capability and the activation of “creative destruction” that pulls the rise of new industries and new economies (Schumpeter 1934). Historical evidence suggests that industrial policy and productive transformation are vital in economic catch-up and structural transformation.<sup>4</sup> However, the landscape of industrial policies is evolving with time, involving the increasing importance of environmental sustainability, the blurred boundaries among sectors, the rise of the high-value services sector, and the industrialization of agriculture.<sup>5</sup>

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3. See also Krugman (1993); Porter (1998); Saxenian (1996).

4. See more: Oqubay (2015); Cramer, Sender, and Oqubay (2020); Oqubay, Cramer, Chang, and Kozul-Wright (2020).

5. See more: Lee (2019); Kuznets (1966); Ocampo, Rada, Taylor (2009); Mazzucato (2013); UNCTAD (2016); Oqubay and Ohno (2019).

## Climate Change and Green Transition

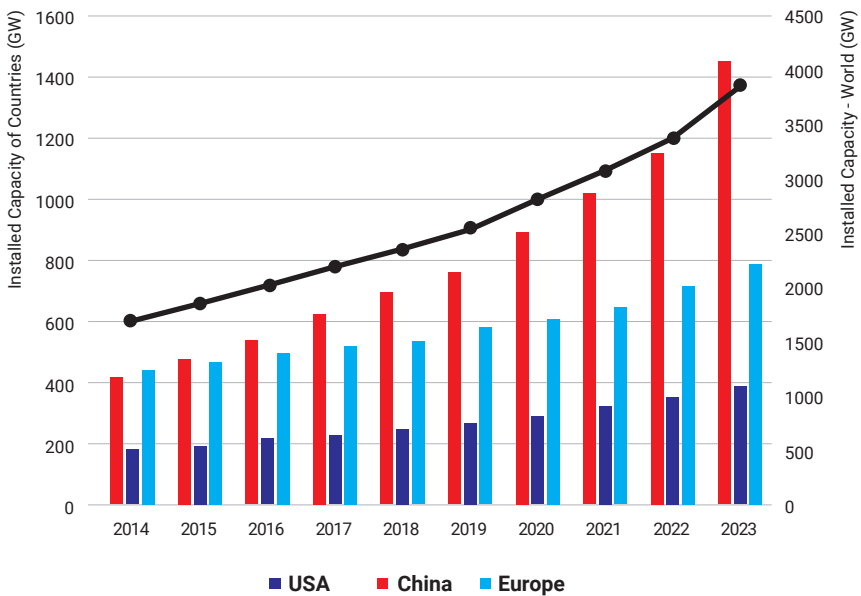
As homes to the majority of humanity and the associated production and consumption, and as engines of economic development, cities are responsible for about 70–75 percent of global urban greenhouse emissions, powered by the dominant fossil fuel energy sources. Out of the 25–30 billion metric tons of CO<sub>2</sub> generated annually, industrial activities in cities account for 20–25 percent, transport, buildings, and built-up areas for about 35–40 percent, mobility for about 20–25 percent, and waste management for the remaining 3–5 percent. From the perspective of environmental sustainability and sustaining economic growth, the appropriate response should *not* be to degrowth, as some prominent advocates advocate, but to find a sustainable approach to growth and economic development. This is because economic development is the only pathway to ending poverty and improving people's living standards in the developing world. The foundation of this perspective is that green growth or green transformation should be based on building industrial capacities and developing green technologies to create a carbon-neutral economy and make progress to net zero emissions.<sup>6</sup>

The significant drivers of green growth and transformation are the increasing pressure for national security—energy security and resource scarcity and the brake on economic catch-up; increasing pollution in urban centres and its impact on public health and public pressure; and the recognition that the world is in the mid of Green Industrial Revolution powered by digital transformation and green technologies. The evidence suggests that carbon emissions, energy use, and accelerated growth can be decoupled. The global green transformation landscape is being championed by developing

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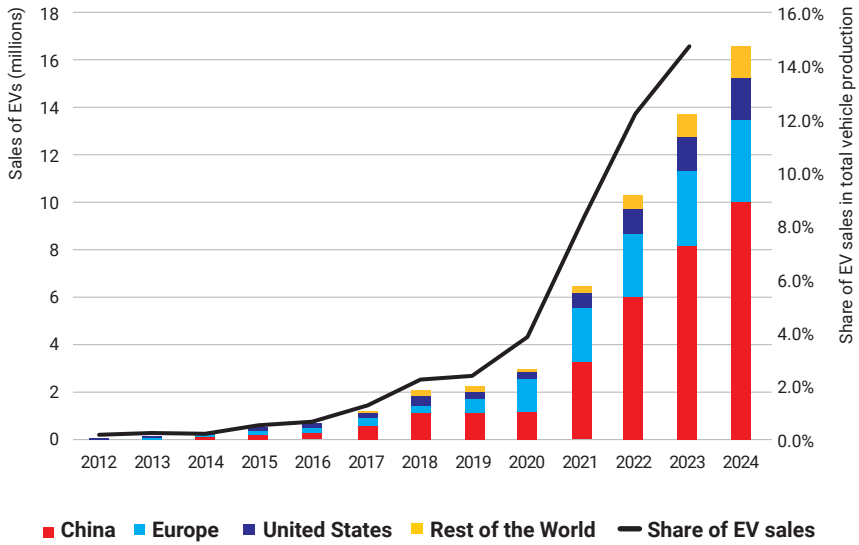
6. See more: Mathews (2014); Mathews and Oqubay (2024); Thurbon, Kim, Tan, Mathews (2023).

countries, particularly in renewable energy, electric vehicles, and battery storage, notably by China, which has allowed drastic cost reduction benefiting from the learning and experience curves. Figure 4 shows the global rise of renewable energy, EV manufacturing, and electric-powered high-speed and metro transport, significantly contributing to urban sustainable development.



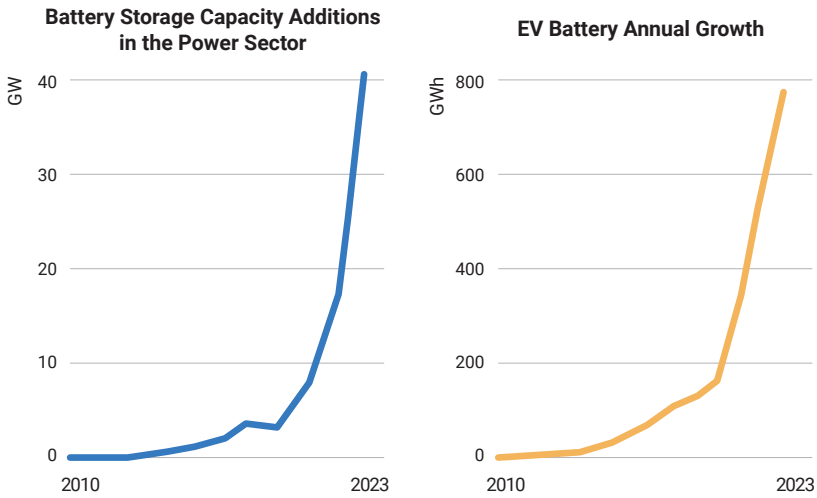
**Figure 3.** Renewable energy (2014–2023).

Source: Compiled by Greening of African Economic Development from the IRENA database.



**Figure 4.** Sales of EVs (2012–2024).

Source: Compiled by Greening of African Economic Development from data of IEA, IRENA, and Organisation of Motor Vehicles Manufacturers.



**Figure 5.** Growth of battery storage technology. The energy sector is propelling huge growth in the global battery market. Today, batteries are the fastest growing clean technology.

Source: International Energy Agency.

On the political economy side, the incumbent fossil fuel industry receives significant subsidies amounting to over a trillion dollars in direct subsidies annually and over five trillion dollars in indirect support, undermining the global carbon-neutral path. In contrast, green growth and green technology attracted insufficient subsidies. In addition to this perspective, just transition is an essential principle, Common But Differentiated Responsibility (CBDR), a solid commitment to establishing loss and damage fund for vulnerable countries, and the polluter pays principle is a guiding principle.

In conclusion, this section reviews the global urban dynamics, which significantly affect policymaking and international collaboration. First, it highlights that developing and emerging economies would play a significant role in global transformation as nearly 80 percent reside in these countries. A considerable wave of urban growth will be concentrated in Asia and Africa, given that the next urbanization shift will occur in these regions. National, sub-national, and local governments can use strategies and policies essential for transformation. Second, all world cities—mega cities, metropolitan, and cities—must focus on economic growth and creating employment opportunities, expanding exports, building productive capacity, and attracting productive investment to steer the economy. For instance, Asia is now emerging as an engine of global economic growth, primarily concentrated in Asian cities. Third, cities have the choice to promote environmental sustainability and green transformation as an essential feature of high-quality economic development and as they have the potential to shape the future. Finally, national urban policies, city plans, and city governance can be crucial in achieving broad goals (Nayyar 2019).

## Urban Sustainable Development and City Transformation

### Global Compact on the SDG Goals

The United Nations adopted Agenda 2030 with 17 SDGs and their main policy application in urban structures, illustrating cities' centrality. These goals call for *productive cities*, as goals 1, 2, 4, 8, and 9 illustrate; *sustainable cities*, as goals 11, 12, 13, 14, and 15 show; and *inclusive cities*, as goals 2, 3, 5, and 10 highlight. The SDG goals' success depends on the policies, leadership and *urban governance*, as goals 16 and 17 show (see figure 4). Given the trend that an increasing proportion of the world population will live in urban centres, then, by default, all the SDGs will directly impact cities since the outcome of the goals is to improve the livelihood of people wherever they live.

SDG Goal	Main policy application in cities and urban settings
1 No poverty	Implement policies that support affordable housing, social protection, and access to essential services to reduce urban poverty.
2 Zero hunger	Promote urban agriculture, improve food distribution systems, and ensure access to nutritious food in urban areas.
3 Good health and well-being	Address urban health challenges such as pollution, lifestyle diseases, and access to healthcare; promote healthy living environments.
4 Quality education	Enhance access to quality education for all urban residents, particularly marginalized communities; ensure equitable education opportunities.
5 Gender equality	Promote gender equality in urban areas by ensuring equal access to services, employment, and participation in decision-making processes.

SDG Goal	Main policy application in cities and urban settings
6 <b>Clean water and sanitation</b>	Ensure sustainable water management, improve urban sanitation services, and reduce water-related environmental impacts.
7 <b>Affordable and clean energy</b>	Increase energy efficiency, promote the use of renewable energy, and ensure affordable energy access for all urban dwellers.
8 <b>Decent work and economic growth</b>	Foster inclusive economic growth, create job opportunities, and promote decent work in urban economies.
9 <b>Industry, innovation, and infrastructure</b>	Develop resilient urban infrastructure, enhance public transportation, and foster innovation to support sustainable urban growth.
10 <b>Reduced inequality</b>	Reduce income disparities, ensure equal access to services, and promote social inclusion in urban settings.
11 <b>Sustainable cities and communities</b>	Focus on urban planning, affordable housing, public transportation, green spaces, and reducing cities' environmental impact.
12 <b>Responsible consumption and production</b>	Promote sustainable urban consumption and production practices, including waste reduction, recycling, and resource-efficient processes.
13 <b>Climate action</b>	Implement climate mitigation and adaptation strategies in cities, reduce greenhouse gas emissions, and enhance resilience to climate-related impacts.
14 <b>Life below water</b>	Manage urban waste and pollution to prevent harm to marine and freshwater ecosystems and protect waterways that run through urban areas.
15 <b>Life on Land</b>	Protect and restore urban green spaces, promote biodiversity, and manage urban forests sustainably.
16 <b>Peace, justice, and strong institutions</b>	Strengthen urban governance, promote inclusive institutions, ensure access to justice, and reduce violence in cities.
17 <b>Partnerships for the goals</b>	To achieve sustainable urban development, foster collaboration between local governments, businesses, and civil society and share knowledge and resources for effective implementation.

**Table 1.** SDG goals and main policy application in urban areas and cities.



## The Paris Climate Agreement

The Paris Climate Agreement (signed by 196 countries in 2015) aims to achieve climate neutrality by 2050, net zero emissions, and maximize efforts to limit the temperature increase to 1.5°C.

<b>Paris Agreement Goals</b>	<b>Policy application in cities and urban structures</b>
1 <b>Limit global warming</b>	Implementing policies to reduce carbon emissions from buildings, transportation, and energy use, and promoting the use of renewable energy sources to contribute to the net zero goals.
2 <b>Adaptation</b>	Enhancing infrastructure resilience, improving urban planning to withstand extreme weather events, incorporating climate adaptation strategies in city development plans, and expanding forest areas.
3 <b>Develop clean technologies</b>	Speeding up technological innovation to bring breakthroughs and enhance international technology transfer.
4 <b>Finance flow</b>	Attracting and directing investments towards sustainable urban projects, promoting green finance, and ensuring that city budgets align with climate resilience and low emission.
5 <b>Climate change funding</b>	Establishing the climate loss and damage fund to support vulnerable regions and rich countries to provide a minimum of \$100 billion for climate change adaptation.

**Table 2.** Paris Climate Agreement goals.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) Synthesis Report provides the most updated scientific synthesis on climate science, impacts, risks, and potential solutions. The following summary highlights the main policy implications for cities and urban areas.

Theme	Implication for Cities and Urban Sustainable Development
1 <b>Global warming</b>	Cities significantly contribute to global warming due to their high energy consumption and emissions. Cities must design strategies to reduce carbon footprint, transition to renewable energy, and improve energy efficiency.
2 <b>Climate impacts</b>	Cities are highly vulnerable to extreme weather events, including heat waves, flooding, and storms. Therefore, they must build resilient urban infrastructure and services. Long-term urban plans must incorporate projections of climate change impacts to ensure future sustainability.
3 <b>Mitigation and adaptation</b>	Cities must prioritize sustainable urban planning, such as green building practices, sustainable public transportation, and green spaces. They should also implement adaptation measures such as flood protection, stormwater management, and upgrade urban infrastructure.
4 <b>Climate finance</b>	Urban areas require considerable investments to pursue low-carbon transitions and build climate resilience. Cities should prioritize budgets for climate goals and mobilize green financing for urban sustainable development.
5 <b>Equity and social justice</b>	Climate impacts disproportionately affect low-income and marginalized communities in cities, and urban policies must enhance equitable access to resources, protect from climate risks, and engage communities in decision-making.

**Table 3.** IPCC's Synthesis Report VI (2022).

Nonetheless, the Paris Agreement fails to address the intellectual property rights (IPR) issue under the TRIPS, which continues to be a significant obstacle, as was observed during the COVID-19 crisis, regarding the waiver of IPR for developing countries. Regarding financial resource mobilization, legal instruments for enforcing the decision were not agreed upon, leading to the sidelining of the critical resolution of the Paris Climate Agreement.<sup>7</sup>

7. See more: IPCC (2023); UN (2015); UNEP (2024).

## **City Transformation and Urban Sustainable Development**

Cities across continents and regions have demonstrated that city governments can play a leading role through exemplary initiatives. This section presents prominent examples in advanced and developing countries and the case of transforming an African city through the case of Addis Ababa, where the author led as a mayor, internationally recognized transformation, for which he received recognition as Best Mayor Addis Ababa and finalist World Mayor, 2006.

### **Transforming an African City: The Case of Addis Ababa**

The metropolitan city witnessed the first significant transformation during the author's Mayorship between 2002 and 2006. This paper presents three major flagship priorities among the many initiatives and plans. The first was an award-winning Integrated Housing Development Program, a pioneering initiative in which the United Nations Human Settlements Programme (UN-HABITAT) conducted extensive studies to extract the best lessons. It aimed to address the 700,000 housing units and shelters deficit and integrate with various multiple aims. The creation of employment opportunities through the booming construction industry aimed to create tens of thousands of jobs and the establishment of hundreds of medium-sized construction companies and sub-contracts, which included extensive capacity-building programs. The program was designed to boost technical and vocational education and training (TVET) to build synergy with skills development. The program aimed primarily at wealth creation to motivate city residents to engage in savings and allow ownership. Housing distribution was based on a computer-based lottery basis to ensure transparency. Women got priority, allowing them to benefit from 55–60 percent of completed

condominium houses, combined with the city government's subsidy providing free land lease costs and infrastructure costs and targeted subsidies to low and medium-income like studio and one-bedroom dwellings. Low mortgage interest rates were integrated into the program, allowing for use for building houses and with a 10–20 percent equity requirement, and mortgage paid back in 15–25 years. The program was integrated with slum upgrading to build neighborhoods partly in the city's old and periphery, maintaining residents' social fabric and neighborhoods that combine community services and commercial quarters (all ground floors), and designing modular and cost-effective buildings. The typical nature of this program combined the productive city, focusing on boosting the city's economic vitality, ensuring environmental sustainability, and executing inclusiveness.<sup>8</sup>

The City Government of Addis Ababa initiated an extensive education program to end the shift system in schools, which hosted 700,000 students in primary and high schools and employed over 12,000 teachers. The primary aim was not only to improve the quality of education but also to ensure that mothers have the opportunity to work full day by ensuring that students attend school for a full day. The city built 5,000 school rooms accommodating nearly 300,000 students, which was necessary for ending multiple shifts and allowing double the teaching contact hours. The program upgraded existing schools with toilet facilities, title deeds, and protected compounds. The program created massive jobs that contributed to developing the construction sector and manufacturers. New modular five-floor building designs were introduced for economic land use, reducing construction costs and allowing massive

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8. See more: City Government of Addis Ababa (2004), UN-HABITAT (2011).

construction to be completed in 12–18 months. All classrooms were equipped with the required furniture and facilities. The project was primarily implemented at the school level in 100 sub-cities and engaged the Teacher-Parent Committees. Additional reforms included reassigning school directors, introducing new recruitment methods, and improving teachers' salaries. Again, the program was designed to build a productive, sustainable, and inclusive city.

A vital component of the city transformation was the changes introduced in the city plan based on the principle of a compact city, the mixed settlements of various income groups (a unique feature of Addis Ababa), mixed residential and commercial buildings, allocating special zones for industrial use, and expanding production and market clusters for small and medium enterprises. The city plan concept shifted from a rigid city planning approach to a structural plan that allows flexibility to adapt to the growth realities, supported by targeted local economic development contributing to the specialization of various parts of the city. A new initiative, Green and Clean Addis Ababa, was launched to mobilize grassroots communities and partner with the private sector and belief organizations. A new institution, the Beautification and Cleaning Agency and Code Enforcement Agency, contributed to sustaining the initiative. Urban mobility is central to improving the city's productivity and economic growth, affecting the quality of living. The city government allocated a significant budget for expanding major arteries, and priority shifted to giving adequate pedestrian pavements. A new approach to completing road projects in the shortest time reduced the disruption during the construction period and improved city performance.

Piloting and phased approaches were introduced in these projects

to test the idea and incorporate best practices and learning, leading to speedy learning and benefitting from the scaling up while managing risks. In addition, the program engaged city residents with inputs to the design of the project, discussion on the draft plans, and reviews during implementation. The city's structure was restructured to make it lean, reduce waste, and improve execution quality. The city hall's restructuring involved over 40,000 employees and was implemented with no layoffs but reassignment to new productive activities. The city hierarchy was reduced from five to three levels—city hall, ten sub-cities, and 100 local administrative offices with service delivery responsibilities. The city government also introduced how the city political appointees are organized, municipal services are under the city manager, and critical municipal services are organized under city public enterprises.

The factors that led to the success of the city transformation were: first, the federal government's commitment to grant Addis Ababa Charter City status with broad mandates allowing the city to play a prominent role, improve its revenue sources, and transform into a thriving city. The national urban development policy, city plans, and industrial development strategies focused on promoting a productive city based on the principle of sustainability (FDRE 2003, 2003, 2005, 2008). The city leadership focused on solutions outside the conventional thinking, coming up with unique approaches to the challenges rooted for decades. It maximized the advantage of learning from targeted learning-by-doing and lessons from international best practices. As a federal capital and the diplomatic and political capital, the seat of the African Union and UNECA, close coordination with the federal government and continental organizations was essential. An essential factor in this process was the focus on engaging the civil society, private sectors, and other

stakeholders, which facilitated the speedy implementation of the transformation plan and inspired the city residents.

In summary, all the reforms undertaken led to the emergence of a sustainable and productive city. The city transformation movement's lasting impact was that the city witnessed a high standard on the city government, and the experiment and outcomes of this pioneering experience became the standard to measure successive mayors. Moreover, the city transformation's most significant impact was that city residents felt empowered and proud of their city.

### Global Experiences in Building Urban Sustainable Development

Productive cities focus on employment creation and attracting productive investment and talents to build international competitiveness in exports and industrial and innovation hubs. Experiences in South Korea, Singapore, and China show that industrial clusters and platforms facilitate the development of productive capabilities. Cities such as Shenzhen, Taipei, and Silicon Valley (San Jose and San Francisco belt) are leading global innovation hubs. Shenzhen, a small fishing village of 3,000 people, has grown into an innovation hub generating nearly half a trillion dollars and is home to global technology companies and world-class R&D hubs in four decades. Silicon Valley accounts for over \$400 billion in GDP and is the home of international tech companies such as Apple, Google, Meta, and others. Taipei accounts for 25-30 percent of Taiwan's GDP. From Africa, Tanger City in Northern Morocco emerged as the primary industrial and productive city and major exporter of automotive and aeronautics industry and international logistics and port services within two decades. The Shanghai New Area development became a primary hub that

attracted high-tech firms and Fortune 500 companies in advanced technologies, including Tesla.

Regional development strategies and inter-city corridors can exploit advantages in massive agglomeration economies, leading to increased economies of scale and higher mobility. The Rotterdam-Amsterdam Corridor incorporating cities such as the port city of Rotterdam, the Hague, Amsterdam, and other cities, and the corridor incorporating transportation, logistics, and economic specialization, is an example that emerged into a major economic hub. The corridor contributes 20–25 percent of the Netherlands's GDP.

Shanghai New Area Pudong Development, developed in the last three decades, is one of China's most significant urban and economic developments. It accounts for 40 percent of Shanghai's total GDP and incorporates a global financial centre, a high-tech park, a free trade zone, and transport hubs. The widely implemented high-speed railway system revolutionized economic integration, ensuring sustainable transport and accelerating urbanization and agglomeration in a vast region.

Developing sustainable cities has increasingly become popular with city residents, and various innovative initiatives have been taken. Singapore has introduced sophisticated city plans and green thinking, making Singapore one of the best places to live and work. Despite its small land (approximately 700 square km, including reclaimed land), extensive green belts and green space have been expanded. Sustainable mobility incorporates restricting and encouraging non-motorized transport, including pedestrian and cycling. The unique approach of the Singaporean housing development strategy is considered among the most advanced approaches. Singapore has built over one million public houses and



high-rises integrated with neighborhood facilities, contributing to economic land use and making it livable. These approaches are part of Singapore's compact city planning model.

Kigali, the capital of Rwanda, has emerged as Africa's cleanest city with green initiatives in the last decade. Like Singapore's green belt, the metropolitan city of London sustained exemplary green parks across the city, improving the city's livability and contributing to reducing carbon emissions. Similarly, Copenhagen and Amsterdam are the best examples of approaches to non-motorized transport, particularly cycling. A significant solution to sustainable mobility is using sustainable public transport, typically involving a metro or underground system. A pioneer and one of the most successful examples is the underground tube in London, built in 1863, constantly upgraded and supplemented by a fleet of over 8000 red buses, making 10 million passenger journeys daily, managed by the city's TfL. It is estimated to cut over 2 million tons of carbon emissions. Vienna has also developed an accessible metro system. Among the latest successful examples is the Delhi metro system, which is nearly 400 km long, transporting over two million passengers daily. The system was developed in 2002 at an investment of \$20 billion, and it is transformative in reducing carbon emissions and improving the city's productivity.

## **Challenges of Urban Sustainable Development and Conclusions**

### **Urban Sustainable Development**

Cities and urban sustainable development are not pivotal in the current state of the global agenda and collaboration, and the G20

could play a critical role in addressing a crucial challenge. The opportunity for achieving SDG goals is narrowing, and it appears unlikely that the goals will be met in the coming five years, as initially planned when the 2030 Agenda for Sustainable Development and Sustainable Development Goals were agreed upon and launched by the UN General Secretary in 2015. A significant challenge has been the inability to align the global financial architecture with sustainable development goals. Achim Steiner of the United Nations Development Programme (UNDP) highlights “There is a pressing need for a new international financial architecture. It must align capital with sustainable development and efforts to address the climate emergency, our global community’s greatest challenge since the Second World War” (Focus 2030 2023). A recent review of the urban context of the Nationally Determined Contributions (NDCs) Paris Climate Agreement points out that the progress has been inadequate in many countries. According to *Urban Content of NDCs: Local Climate Action Explored Through In-Depth Country Analyses, 2024 Report* (UNDP and UN-HABITAT 2024), only 27 percent (53 NDCs) had a high urban content, while 39 percent (76 NDCs) showed moderate urban content, and 34 percent (65 NDCs) lacked urban content.

According to IRENA, the progress made in the clean energy transition (SDG 7) has been inadequate. It is primarily constrained by financing and resources, although technological breakthroughs and innovations have made significant progress in terms of renewable energy, production of EVs, and battery storage. The aim to triple renewable power and double energy efficiency has not been achieved because of lagging public and private financing and access to low-cost financing in the developing world. The investment requirement is over \$1.5 billion annually until 2030, and so far, the

finance has reached \$0.5 trillion in 2022. Importantly, developing countries have received unequally low, typically seen in Africa, which received below 2 percent of the total. IRENA's report shows that the disparities in investment per capita shot up between 2015 and 2021 between Sub-Saharan Africa and developed economies—it remained the same in Africa while it rose from 22 times to 41 times in Europe and from 23 times to 57 times in 2021. African cities face a binding constraint of mobilizing resources for urban sustainable development and smooth running of the cities, and this should be seen not only as a challenge for developing countries such as African policymakers but also as a global challenge. The SDG goals and the Paris Agreement are unlikely to be achieved with the current state of commitment. This has to be linked to the \$1 trillion average annual super-profits earned in the last 50 years, over \$1 trillion in subsidies to the fossil fuel industry, and inadequate subsidies for energy transition. Hence, the obstacle is political constraints rather than the adequacy of financial resources. There has been little progress in raising the loss and damage fund, showing the depth of the problem and pushing cities in the Global South to more profound vulnerability.<sup>9</sup>

Indicators	2023 (in \$ billions)	2024–2030 (in \$ billions)	On/off track
Investment in renewable power generation (yearly)	570	1,550	Off track
Investment needs for power grids and flexibility (yearly)	368	720	Off track
Total (yearly)	938	2,270	Off track

**Table 4.** Finance and investment requirement of renewable energy (2023–2030) (based on 1.5oC Scenario).

9. See more: IPCC (2023); IEA (2024); IRENA (2024).

## Governance

Political constraints from government structures include the inadequate powers exercised by local governments, conflicting priorities, blurred mandates among cities, and subnational governments—states, regions, and provinces are significant obstacles that weaken cities' role and contribution. Across countries, significant diversity is influenced by history, culture, and politics. In recent years, political constraints have been added to the reality of election results, where the ruling party may not have an outright majority, and the coalition has to function jointly while managing the tensions. In some other cases, the difficulties are compounded by a paralysis of governance and long-term investment in public utilities is neglected. The case of metropolitan Johannesburg is a good example where the coalition could not function harmoniously. The ruling parties may also change every election cycle after 4 to 5 years, which may disincentivize long-term investment programs or lead to the sidelining of significant infrastructure programs that must continue beyond the election cycle.

In addition, cities' mandates could be limited to municipal services in many cases. In contrast, cities are not responsible for leading the education system, fiscal centralization limiting the cities' mandate to raise revenue, or are not mandated to develop and manage infrastructure. Many positive experiences are available on how cities could be empowered with broad mandates and how city, sub-national, and national governments coordinate optimally and build synergy. There is no standard prescription for addressing the political and governance challenges effectively. However, a good beginning could be a political commitment to ensure cities play prominent roles in achieving national goals and effectively

responding to citizens' demands. Targeted learning on such experiences could contribute to better practices.

Cities should improve their empowerment of citizens—not only the key constituencies but also the minorities—to ensure all critical decisions are consulted and maximize the direct participation of all communities. Representative democratic practices limited to participating in periodic elections are inadequate.

### City Leadership and Urban Sustainable Development

Several insights and conclusions emerge from the paper. First, resilience, adapting, and learning have become vital. We live in a changed environment where volatility and uncertainty are the order of the day, and we live in an interconnected world. In the last 15 years, the world has faced three global crises: the 2008 Global Financial Crisis, the COVID global pandemic, and the global economic recession in 2020–2024. Leadership based on conventional wisdom no longer works, and management and leadership thinking are being redefined. Resilience is increasingly becoming a response to a world of poly-crisis with implications of the role of cities, the nature of intergovernmental coordination and how we live, work, and learn. Long-term and strategic perspectives are essential to adapting to the evolving external environment, which demands rapid learning and openness.

Second, building on linkage effects in development thinking and policy approaches should be a cornerstone of planning and execution. This approach is based on the principle that all activities do not necessarily have the same leverage and linkage effects. Every program and plan should be designed to maximize the promotion

of linkage effects that forcefully lead to other productive activities. Resources are always limited and demands exceed the resource scope of cities and national governments. The approach should be strategic and pragmatic, targeting resources on activities that generate maximum synergy. In addition, city leadership should look at hidden and scattered resources to put in force. Hirschman (1958) highlights that “Development depends not so much on finding optimal combinations for given resources and factors of production as on calling forth and enlisting for development purposes *resources and abilities that are hidden, scattered, or badly utilized.*” This development perspective is connected to Amsden’s (1989), diversity notwithstanding, all late industrializers have in common industrialization, “emphasizing a developing thinking that builds on learning and an unconventional approach to fundamental development challenges.

Third, cities should be able to capitalize and exploit the “advantage” of local governments, leveraging the closeness to city residents, which puts significant pressure for better performance, to tap on ideas and resources of city residents, and the network opportunities within the city, horizontally among cities, and other potential partners and stakeholders. Building on little successes and a phased approach will build momentum and capabilities, building on speed and scale economies. Exerted efforts should be put into developing leadership capabilities through experience sharing, leadership dialogue, and centres of excellence, combined with relevant research—new knowledge and policy research—and building strong partnerships with scientific communities, including research universities and think tanks.

## Conclusions

The paper delves into the themes of urban sustainable development within the context of productive and sustainable cities. It highlights the importance of cities in achieving the goals of Agenda 2030, the Sustainable Development Goals (SDGs), and the Paris Climate Agreement. The paper outlines the key global trends that impact cities and urban transformation, including demographic and urbanization patterns, agglomeration economies, climate change, and the digital and green technologies of the twenty-first Industrial Revolution. It also discusses the concept of productive and sustainable cities and the current status of global compacts and collaboration.

The paper emphasizes several vital insights. Firstly, it underscores the historical influence of cities on civilizations, economic development, and innovation. Secondly, it points out that rapid urbanization in the Global South, particularly in Asia and Africa, presents opportunities for government policies to harness this positive force. Importantly, the paper stresses the need for a comprehensive vision and strategy at national, sub-national, and local levels to develop productive and sustainable cities. It provides practical guidance and examples from the evolution of such cities.

The paper evaluates the focus of the SDGs and the Paris Climate Agreement on cities and urban transformation, acknowledging the challenges, such as financial and political constraints. It also underscores the increasingly significant role of the Global South in driving global economic growth and green transformation, with China at the forefront of this global shift. This recognition of the Global South's importance to relate it to global collaboration that will bring collective and mutual benefits. The evolving global changes have redefined city leadership, making it crucial and urgent

to focus on building productive, sustainable, and inclusive cities.

Moreover, the paper suggests that the G-20 Summit in Rio has the potential to invigorate urban sustainable development significantly. With Brasil advocating for the voice of developing and emerging economies and promoting global collaboration, this summit could be a pivotal moment in pursuing sustainable cities.

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