Transformation Of African Cities

Opportunities For Collaborative Partnerships To Advance Green Growth

The rise of cities and the power of partnerships are two transformative trends that hold the potential for spurring green growth in Africa.

Over coming decades, Africa will become increasingly urbanized. And because urban development often relies on rural resources, cities can stimulate green growth in the countryside. The question of how African cities provide the energy, food, infrastructure, waste management, and water security their citizens need offers a unique opportunity to influence and drive the sustainability of the continent's economic development.

In addition, a growing urban middle class is expected to accelerate demand for food, water, transport, energy, technology, and other goods and services. The aspirations of the new and growing middle class will challenge greenhouse gas and natural resource use intensity and create a demand for new business models to ensure the sustainability of Africa's economies.

Green growth in Africa can be achieved if production and consumption patterns that meet the needs of citizens and businesses can at the same time reduce pollution and greenhouse gas emissions, improve energy and resource efficiency, and avoid the degradation of the natural capital that underpins all economic development. Numerous studies project that such a transition to a green economy can spur economic development worth trillions of dollars over the next 15 years worldwide.

Green solutions that lower the environmental footprint of products, services, and lifestyles exist in many instances. So do new approaches that overcome market, policy, or institutional barriers to green growth. But in most cases these solutions are advancing too slowly.

Collaborative partnerships engaging more stakeholders (including private) are emerging as an effective approach to identify, demonstrate, and scale up such green solutions. Public-private collaborative partnerships are now being recognized as critical for mobilizing decision-makers and the investments needed to tackle these challenges and thereby achieve green growth. Nearly 1400 partnership actions were recorded at the Rio+20 Earth Summit and more partnerships emerge each year. In fact, most sustainability issues today have one or more collaborations working on them to achieve pragmatic solutions. The Global Green Growth Forum (3GF) is leading the way in advancing such collaborative public-private partnerships to achieve green growth (Box 1).

- This paper explores the promise to green growth of these two major trends –the rise of African cities and the power of collaborative public-private partnerships–by addressing four questions:
- How could cities drive green growth in Africa?
- Which areas of the urban economy are priorities for driving green growth?
- Which collaborative public-private partnerships could be scaled for accelerating this green growth?
- With changing lifestyles in Africa, how can these partnerships help meet climate and sustainability goals in this continent?

BOX 1. THE GLOBAL GREEN GROWTH FORUM

The Global Green Growth Forum (3GF) is a platform to advance collaborative partnerships to accelerate the transition to a green economy. 3GF's mission is to explore, promote, and demonstrate how better collaboration among leading businesses, investors, think-tanks, experts, international organisations and governments can effectively realise the potential for long-term inclusive green growth. Partnerships are being launched in areas where markets and government action on their own have not been able to solve intractable challenges.[4]

How Could Cities Drive Green Growth?

Cities have the potential to be major drivers of green growth in Africa.

Cities as the engines of development

Demographic and urbanization trends are changing the course of Africa's development, particularly in terms of investment, production, and consumption. Cities are now at the centre of Africa's economic transformation and will be fundamental to unlocking the continent's future potential.[5] Large cities in Africa already make a disproportionate contribution to national economies, mainly because they have more developed communication and housing assets relative to medium- and small-sized towns.[6] Addis Ababa, for example, has only four percent of Ethiopia's population but generates almost 20 percent of the country's gross domestic product.

The importance of cities in Africa is poised to grow even more over coming decades in light of several trends:

- *Growing continental economy.* By 2025, Africa's economy is projected to double to $US 4 trillion.[7]
- *Rising middle class.* By 2020, 128 million African households are projected to enter the middle class.[8]
- *Shifting population to cities.* By 2030, the African urban population is projected to grow by an additional quarter of a billion people, reaching a total of 620 million or 45 percent of the continent's population.[9]
- *Rising urban purchasing power.* By 2030, the top 18 African cities are expected to reach a combined purchasing power of U$US 1.3 trillion.[10]
- *Growing labour force.* By 2040, Africa will have the world's largest labour force with 1.1 billion people.[11]
- *Increasing infrastructure investment needs.* Africa requires nearly $US 100 billion a year in infrastructure investment–most of it in cities–to ensure adequate growth and service delivery.[12]
- *Expanding corporate investment.* A recent survey of 220 multinational corporations revealed that more than two-thirds are interested in expanding business in Africa's cities,[13] especially in those that are growing fast.[14]

The window of opportunity

These trends present a window of opportunity for catalysing green growth in Africa. That is because businesses, governments, and citizens will have to address many critical decisions and investment choices concerning water supplies, energy sources, food security, building design, transport infrastructure, and more. These decisions are coming soon; the next two decades are what matter.

The decisions and investments made will have huge implications for the future of Africa. If done poorly, they can lock in low productivity, social inequality, and environmental degradation. If done wisely, however, they can increase economic vitality, improve the quality of life, and reduce the environmental footprint of Africa's cities.

International experience indicates that cities can drive such green growth. For instance, the C40, a coalition of the world's megacities, is taking action to reduce greenhouse gas emissions and address climate change risks while creating jobs and growing their city economies. The Global Commission on the Economy and Climate found economic and environmental benefits of more compact and connected urban development that is built around mass public transport. Such an approach to urbanisation could reduce infrastructure capital requirements by more than $US 3 trillion globally over the next 15 years.[15] Moreover, a recent analysis for Ethiopia found that building compact, connected, and environmentally well-managed cities along strategic economic corridors could unlock the economic potential of Ethiopia's cities and establish the foundation for a more inclusive and sustainable national economy.[16]

The importance of urban-rural links

To achieve green growth in Africa, the close interaction between cities and the surrounding countryside needs to be recognized and carefully managed. The urban-rural linkages run both ways. Growing cities, for instance, require land for housing, industry, and transportation infrastructure. They rely on nearby watersheds for their water supply and wastewater management. And most urban areas rely on rural landscapes to help meet demand for food, fibre, and other environmental services. Conversely, rural areas rely on cities for economic growth through markets, supply chains, and flows of people and money. But these urban-rural linkages, if not planned and managed well, can create challenges for peri-urban and rural areas, for example, if productive agricultural land is converted or if ecosystem degradation starts to undermine critical water and other resources.

The importance of the water-energy-food-land nexus

Likewise, to achieve green growth in Africa, public and private sector decision-makers in cities need to carefully manage the interactions between a number of resources, including:

- *Energy and water.* Water utilities require energy to pump and treat sewage while energy utilities use water for cooling, extracting fuels, and generating hydropower.
- *Water and food:* Water demand by households and industries (and their wastewater discharge) can affect downstream food production. Drinking water and hydropower utilities depend on farming and land-use practices upstream, which affect water flows and sediment levels.
- *Food and energy:* Energy is needed to produce, process, and transport crops.
- *Energy and urban design:* Energy powers the modern city through transportation and electricity. But how a city's buildings are designed and where transportation infrastructure is located impacts energy consumed for transport, heating, and cooling.

Policies, practices, and investments that focus on the positive synergies within this water-energy-food-land nexus have the potential to help meet multiple needs simultaneously and enhance overall economic (and environmental) performance.[17] They are on the pathway toward green growth.

Which Areas of the Urban Economy are Priorities for Driving Green Growth?

Three areas of the urban economy are particularly important for driving green growth in Africa:

- **Energy**. Access to modern, reliable energy sources is currently a major obstacle to economic development in many parts of Africa. For example, more than two-thirds of the population in sub-Saharan Africa has no access to electricity;[18] the figure rises to 40 percent for those living in cities.[19] Wood and fossil fuels are still the major energy sources, yet they entail negative impacts on air quality, human health, forest extent, and greenhouse gas emissions. For instance, wood and charcoal represent around 60 percent of energy demand in sub-Saharan Africa and continue to grow faster than other fuels.[20] Coal made up 18 percent of total energy demand in 2012, a result of widespread use in South Africa.[21] Yet the share of modern renewables is less than two percent, although local renewable energy sources such as solar, hydropower, and wind have great potential and their costs are rapidly dropping.[22]
- **Wastes**. Unmanaged waste is creating health and environmental hazards. Although low relative to the global average, African cities produce between 0.3-0.8 kg of solid wastes per person per day,[23] and this is expected to grow as the continent develops. Wastes are polluting neighborhoods, affecting the well-being of children, and creating only marginal income opportunities for waste pickers and informal waste recyclers. Poorly managed landfills are emitting methane, a powerful greenhouse gas. Tackling the issue is proving problematic. Urban wastes, by definition, do not have adequate market-driven signals of value. Moreover, cities consistently face challenges in securing finance for waste infrastructure due to the capital intensive nature of these investments.
- **Water**. Water demand in Africa is growing faster than population growth. Over the next 25 years, in fact, water demand is projected to increase almost fourfold–driven by a growing middle class, manufacturing sector, and agriculture.[24] In response, cities will need to find ways to make every drop go farther. Yet the decision-making environment will be complex. There will be continued competition between agricultural, industry, and municipal (drinking) sectors for the resource. Some cities face too much water (floods) while others too little (drought). Since water is both an input for production and a place for waste disposal, decision-makers will need to be concerned about not only water quantity but also water quality. Moreover, current rainfall patterns are projected to be different in the future due to climate change.[25]

Each of these areas share some features in common. For each, there is an unmet and rising demand for what is essentially a basic urban service. For each, technologies and business models do exist that could satisfy this demand in a sustainable, green growth manner. And for each, there are market, policy, or institutional barriers to deployment of these technologies and business models that neither the private nor public sector can readily solve on its own. It will take collaborative partnerships.

Which Collaborative Public-Private Partnerships could be Scaled for Accelerating this Green Growth?

Collaborative partnerships unite diverse actors in the pursuit of common goals. They can support companies and governments in removing market, technology, policy, and institutional barriers to progress and thereby cross tipping points of change. All three priority areas of the urban African economy–energy, water, and wastes–are ripe for such public-private partnerships to help realize the potential of green growth.

Energy: Partnerships to catalyse renewable energy, decentralized systems, and energy efficiency

Public-private partnerships could go a long way toward catalysing large-scale investment in and deployment of renewable energy, distributed generation, and energy efficiency technologies in African cities. Partnerships are needed to advance public policies, develop model contracts, set quality standards (e.g., for solar lighting), aggregate purchasing (to drive down costs), introduce financing instruments, raise new capital, accelerate technology or "know-how" transfer, and more in a manner that is conducive to wide adoption of these energy systems. More specifically, opportunities for green growth partnerships include:

- **Scale up renewable energy sources such as solar photovoltaics and wind**. The combination of rapidly increasing urban energy demands and declining costs of solar photovoltaic and wind energy generation creates new opportunities for diversifying energy markets with renewables. With the right set of incentives and business practices, large-scale consumers (e.g., food processing companies, industrial parks, public sector institutions) could establish long-term base demands for renewable energy, helping to secure financing for renewable energy systems and putting cities at the forefront of clean energy development. Partnerships are needed in Africa to establish renewable energy buyer groups that aggregate demand, create knowledge-sharing platforms amongst large-scale consumers and renewable energy suppliers, align public policies with private incentives, and make transmission grid improvements.
- **Encourage decentralized renewable energy technologies and energy systems.** Supplying distributed renewable energy technologies such as solar water heaters, solar photovoltaic panels, and biogas digesters represent business opportunities for entrepreneurs and create low-tech and high-tech jobs along the value chain. A decentralized energy system that relies on distributed generation of energy and heat, energy storage, and demand-response can increase energy access, improve power reliability, reduce fossil fuel use, and increase eco-efficiency. Many of these distributed generation opportunities are ideally suited for micro and small enterprises since they are familiar with running urban services as business enterprises. Partnerships are needed in Africa to increase distributed off-grid sources within urban areas through advancing policies, increasing finance, and stimulating demand–particularly among large urban customers.
- **Promote energy retrofits and boost building efficiency.** Technologies such as energy-efficient wood-stoves, solar cookers, energy-saving systems for appliances, home insulation, and green roofs all represent new business opportunities, can reduce costs for consumers, and lower greenhouse gas emissions. In addition, if new financing opportunities in the low-carbon development sector can be secured and suitable contracting arrangements crafted, African cities could capitalize on opportunities to boost energy efficiency in both commercial and residential buildings.[26] Partnerships are needed in Africa to integrate policies and investments to address challenges such as financing energy efficiency in new build construction or retrofitting for energy efficiency in existing building stock.

Several existing 3GF global partnerships are pursuing these opportunities (Box 2) and could inspire collaborations focused on African cities.

BOX 2.
3GF GLOBAL PARTNERSHIPS SUPPORTING ENERGY EFFICIENCY, RENEWABLE ENERGY AND DECENTRALIZED ENERGY SYSTEMS

→ **Scaling Green Off-Grid Energy Solutions** works to accelerate and scale up off-grid solutions in Africa, providing access to high quality, clean and cost effective electricity systems in rural and isolated areas.

→ **Building Efficiency Accelerator** is a network of businesses and NGOs providing tools, expertise, technical and financial capacity to sub-national governments to help accelerate improvements in energy efficiency in buildings.

→ **Power System Transformation** enables the development of reliable, efficient, and affordable electricity systems while minimizing health and climate impacts through best practice and knowledge sharing.

Wastes: Partnerships that unlock new value from a circular economy

Some African cities have introduced promising solutions to reduce waste and make use of waste streams. These efforts, however, often have difficulties in going to scale beyond the project level. Partnerships are needed to overcome barriers to scaling such as information asymmetries, lack of critical mass of waste feedstock supply and waste users, and supportive policies. Opportunities for green growth partnerships include:

- **Separating and reusing organic material.** More than half of the solid waste in African cities is organic material.[27] There is huge potential to advance waste separation and reuse of organic materials. Crop and food wastes, for example, are becoming a primary feed source for urban livestock keepers in Kampala, Uganda.[28]
- **Generating energy from waste.** Waste can be converted into energy. For instance, the eThekwini (Durban) municipality in South Africa is generating energy from landfill methane[29] while the Rwanda's National Domestic Biogas Program is generating biogas from household wastes.[30]
- **Combining liquid and solid waste streams.** Sludge from sewage treatment plants can be combined with household wastes to generate energy or other products. Technical feasibility and safety have been demonstrated via successful public-private partnerships elsewhere,[31] suggesting that there may be opportunities in Africa.
- **Linking informal systems of waste collection with waste-to-energy generation.** In selected cities, opportunities may exist to link informal systems of waste collection (e.g., low-income trash pickers) to formal waste-to-energy generation facilities.

The 3GF partnership on *Integrated Waste Management System*, launched in October 2014, could offer insights into how to develop best practice roadmaps and how to establish demonstration sites. Other 3GF partnerships could also help catalyse action in Africa (Box 3). An important objective for more local partnerships in Africa is to improve the enabling environment for businesses to enter the circular economy. For example, waste-to-energy partnerships require guarantees that ensure sufficient waste supplies and consistent demand for the produced energy.

BOX 3.
3GF GLOBAL PARTNERSHIPS SUPPORTING A CIRCULAR ECONOMY AND MORE SUSTAINABLE LIFESTYLES

→ **Integrated Waste Management System** unlocks value in the waste management and recycling supply chain through demonstration sites, best practice roadmaps and creating an enabling environment.

→ **Waste, Polymers, and Packaging** is a network of influential cities, reverse logistics companies, consumer goods manufacturers, and retailers developing a roadmap for plastic packaging in the circular economy.

→ **Industrial Symbiosis** brings together companies from different sectors to raise awareness of industrial symbiosis and identify business opportunities and avoid waste in a circular economy.

→ **Business and Innovation for Sustainable Lifestyles** enables sustainable lifestyles through testing and upscaling new business models with a focus on public-private partnerships at country level.

Water: Partnerships to manage water, sanitation, and watersheds in an integrated way

A recent survey conducted to advance more integrated urban water management highlighted the strong interest by African city leaders and utility operators to include a broad range of issues in their water management plans, including water resources management, flood and drought preparation, rainwater harvesting, and solid waste management.[32] While they expressed intent for more integrated urban water management, partnerships are needed to build the knowledge base, identify scalable location-specific solutions (since solutions are watershed-specific), and link to experiences in other cities across Africa and in other regions (e.g., Latin America).

Particular opportunities for partnerships to advance green growth include:

- **Ensuring safe water reuse for agriculture.** Many African cities and towns have flourishing urban and peri-urban agriculture. Irrigated vegetable production, for example, is widespread in West Africa cities.[33] Helping these farmers to access water supplies with acceptable water quality levels and providing low-cost treatment options to facilitate safe reuse of wastewater to minimize health risks could make crop value chains more sustainable and boost farming and food security.
- **Improving solid waste management and sanitation within a watershed.** Improving sanitation and solid waste management creates business opportunities and direct benefits for household health and urban living conditions. City-wide benefits, for example, include improved groundwater quality by avoiding pollution and reduced flooding by removing drain blockages.
- **Addressing climate change risks in urban planning.** Many large African cities are located in coastal areas and flood plains. Some of these areas run the risk of saltwater intrusion through sea level rise, and unpredictable floods and droughts. One aspect of green growth is to create mechanisms by which vulnerable populations are made aware of climate-induced risks, and offer protection through either physical relocation or disaster risk insurance.
- **Harnessing the informal sector.** The water and sanitation sector provides opportunities for solutions that harness the innovation of the informal sector. For example, water vending is common in most African cities. Enhancing vendor capacity to deliver safe drinking water can be a much more cost effective and sustainable solution than investing in a costly piped water distribution system that barely reaches a fraction of a city's population. Partnerships could establish business support and other mechanisms to better involve and professionalize the informal sector.

The 3GF partnership *Water Resources Management 2030* (Box 4) is working on sustainable water sector transformation (e.g., it helped catalyse the South Africa Strategic Water Partners Network in 2011),[34] and an Africa-specific 3GF partnership for integrated urban water management can be put in place. New partnerships could further advance knowledge platforms that help make the economic and business case for action. For instance, a Nairobi case study highlighted how an integrated water management approach is less expensive than a business as usual approach.[35] Other partnership opportunities include establishing demonstration sites (e.g., for recycling wastewater or for water-sensitive urban design) and designing new incentives that motivate private and public actors to work across sectors that touch water (e.g., water funds and green bonds for water, which are being advanced by 3GF as global partnerships).

BOX 4. 3GF GLOBAL PARTNERSHIPS GREENING THE WATER SECTOR

- → **Water Leakages Learning Network** aims to scale up water saving solutions in rapidly growing cities through performance-based contracts, where technology providers are paid through the savings they create.
- → **Water Resources Management 2030** engages in fact-based, analytical approaches and coalition building initiatives that help governments to catalyse sustainable water sector transformations.
- → **Green Bonds for Water** promotes more sustainable water management approaches through qualifying standards for water "green" bonds.
- → **Water Funds** pay for watershed protection and restoration.

With Changing Lifestyles in Africa, how can these Partnerships Help Meet Climate and Sustainability Goals in this Continent?

This paper makes the case for the opportunity and need to identify and develop collaborative public-private partnerships that leverage the rapid urbanisation of and changes in lifestyles in Africa to achieve green growth. Such partnerships in turn would engage the public sector, civil society, think-tanks, international organisations and private companies in joint contributions to attaining global climate and sustainability goals (Box 5).

Priority areas for public-private collaboration include:

- **Invest in energy efficiency, renewable energy, and decentralized energy systems.** This partnership area is arguably the most immediately feasible. Proven technical solutions exist and decision-makers have a strong interest to increase energy supplies and access in order to fuel industry development, small enterprise expansion, urban growth, employment, and tax revenue. What is needed are partnerships to overcome market, policy, and institutional barriers to deployment. Existing global 3GF initiatives are tackling these issues and can be fine-tuned for Africa.

  Partnerships that advance deployment of renewables and energy efficiency would generate a number of climate and sustainability benefits. For instance, they would reduce greenhouse gas emissions from the energy sector (SDG 13), reduce poverty (SDG 1), boost energy access (SDG 7), improve the liveability of cities (SDG 11), and create new business and employment opportunities along the value chain (SDG 8), among others.

- **Unlock new value from a circular economy.** Promising solutions exist for redirecting waste streams and underutilised resources from one industry or activity to another. More effort is needed to put demonstrations in place, drive down costs, and take them to scale. A number of 3GF partnerships have launched around the world and could be adapted to African cities.

  Sustainability benefits would vary by circular economy. Waste to energy partnerships, for instance, would contribute to liveable cities (SDG 11), combat climate change (SDG 13), and create jobs (SDG 8). Recycling of organic wastes that are being applied in agriculture would contribute to more sustainable agriculture (SDG 2) and more liveable cities (SDG 11).

- **Manage water, sanitation, and watersheds in an integrated way.** This partnership area may require considerably new efforts. But given projected increases in water stress in Africa,[36] partnerships are urgently needed. Global 3GF partnerships are in place that could take some of the proposed ideas on board, or could inspire more localized collaborations.

  Sustainability benefits would abound. Partnerships addressing solid waste, sanitation, and drinking water would support more liveable cities (SDG 11), improve availability of sanitation (SDG 6), boost sustainable water management (SDG 6), make urban life more safe (SDG 11), and contribute to healthier lives (SDG 3). Moreover, partnerships linking urban agriculture and waste water re-use would contribute to more efficient water use (SDG 6) and food security (SDG 2).

In summary, all three priority partnership areas would help catalyse economic growth, reduce poverty, and improve the environment. As a result, they would set Africa on the path toward green growth.

BOX 5.
PARTNERSHIP PRIORITY AREAS AND THE SUSTAINABLE DEVELOPMENT GOALS

The regional 3GF meetings, organized in Africa, Latin America, and Asia during 2015, and the priority areas discussed at them are closely aligned with the international discussions leading to new climate and sustainability goals. In September 2015, the UN summit will adopt the new Sustainable Development Goals (SDGs), and the UNFCC COP21 will propose a new climate deal in December 2015. These global commitments will guide green growth and sustainable development priorities over the next 15 years.

3GF is an action-oriented platform for implementing these new commitments. The next 3GF global summit, to be held in Copenhagen in April 2016, will provide an opportunity to strengthen and scale collaborative public-private partnerships in support of these goals.

The collaborative partnerships discussed in this paper would directly contribute to five of the new goals being proposed by the United Nations Open Working Group on Sustainable Development Goals:

- → **SDG 6:** Ensure availability and sustainable management of water and sanitation for all.
- → **SDG 7:** Ensure access to affordable, reliable, sustainable and modern energy for all.
- → **SDG 11:** Make cities and human settlements inclusive, safe, resilient and sustainable.
- → **SDG 13:** Take urgent action to combat climate change and its impacts.
- → **SDG 17:** Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Depending on specific action areas chosen, these partnerships also would support more generally the following goals:

- → **SDG 1:** End poverty in all its form everywhere.
- → **SDG 2:** End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- → **SDG 3:** Ensure healthy lives and promote well-being for all at all ages.
- → **SDG 8:** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- → **SDG 9:** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- → **SDG 12:** Ensure sustainable consumption and production patterns.

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