



THE THIRD AFRICA CLIMATE RESILIENT INFRASTRUCTURE SUMMIT 27-28 FEBRUARY 2018

AFRICA CLIMATE RESILIENT INFRASTRUCTURE SUMMIT

Investment in Climate- Resilient African Infrastructure: *Background Document*

Investment in Climate-Resilient African Infrastructure

This Background Document was prepared by Jamal Saghir, Chairperson of the Third Africa Climate Resilient Infrastructure Summit. He is Professor of Practice at the Institute for the Study of International Development at McGill University, Montreal, Canada; and Senior Associate at the Center for Strategic and International Studies, Washington, D.C. He is a former Director and Senior Regional Advisor (2000-2016) at the World Bank Group. He was appointed in 2009 by the UN Secretary as core member of The Secretary General's High-Level Advisory Group on Energy and Climate Change. He was also appointed as core member of the Global Energy Assessment from 2008-2011.

Introduction

Africa is more victim than contributor to climate change, so adaptation and investment in climate-resilient infrastructure are high development and investment priorities. Africa contributes a meager 5% to global GHG (greenhouse gases) emissions and the bulk of its emissions derive from deforestation and land use change. Warming in the range of three to four degrees Celsius would have disastrous consequences for Africa, including heat extremes affecting the vast majority of the continent's land areas, heightened risks of extreme drought (particularly in southern Africa), reduced yield and crop failures, and flooding.

Furthermore, it is estimated that by 2050 almost 60 percent of people (800 million) in Africa will live in cities, increasing demand for transport, housing, water, and energy infrastructure. It is thus imperative to invest in resilient infrastructure, including water management (irrigation, hydropower, water supply, and flood control), roads, bridges, energy, and other transport infrastructure.

All countries will have to invest significant public and private resources in infrastructure, both to upgrade existing systems and build new networks. Over the next 13 years up to 2030, the world will need to build infrastructure in the order of US\$75-86 trillion—approximately double the current estimated US\$50 trillion stock of infrastructure. Around 70 percent of these infrastructure needs will be in emerging

markets and developing economies, Africa in particular. These investments will be driven by a range of factors including the ageing of existing infrastructure and changing demographics, as well as policy objectives such as greenhouse gas mitigation.

In order for Africa to meet its infrastructure gap, it is estimated that over US\$95 billion per year will need to be spent over the next decade, split evenly between investment and maintenance costs. This is about double the current spending levels, which amount to around US\$45 billion annually—with more than half being funded by the public sector. This leaves a financing gap of around US\$50 billion per year.

The Program for Infrastructure

Development in Africa (PIDA), endorsed in 2012 by the continent's heads of state and government, lays out an ambitious long-term plan for closing Africa's infrastructure gap, including through major increases in hydroelectric power generation and water storage capacity. Much of this investment will support the construction of long-lived infrastructure, including dams, power stations, roads and irrigation canals, which may be vulnerable to changes in climatic patterns, although the direction and magnitude of these climatic changes remain uncertain. In any event, the location, design, construction and operation of infrastructure will have profound impacts on the resilience to climate change of both individual countries and the continent as a whole.

Building climate resilience into infrastructure investment decisions provides scope to both enhance resilience and avoid the risk of costly retrofitting in future. But several barriers to financing climate resilient infrastructure need to be overcome. These include:

- *Lack of transparent and bankable pipelines of projects*, arising from the absence of long term development plans and failure by many African governments to communicate infrastructure needs to investors.
- *High development and transaction costs*, due to inefficient bidding and procurement processes that require investors to tailor each infrastructure project to different standards.
- *Lack of viable funding models*, so that investors demand higher returns than can be delivered or require high charges that users are unwilling or unable to pay, particularly in developing countries.
- *Inadequate risk-adjusted returns* that do not compensate investors in developing countries for the additional risk associated with unfavorable regulations and policies, including foreign investment restrictions.

Public concessional climate finance has a key role as a low-cost source of finance which, when blended with other sources of public finance, can de-risk African infrastructure projects and crowd-in private finance. Concessional climate finance invested as part of a broader funding package could lower risk and overall financing costs, thereby leveraging the private sector capital needed to close a good portion of the infrastructure spending gap.

Using Climate Finance for Climate-Resilient Infrastructure in Africa

Financing African infrastructure projects requires matching various sources of capital—climate finance, Multilateral Development Banks (MDBs), and private sector—with the different risks incurred during the project lifecycle. At the project preparation stage, concessional climate

finance blended with finance from MDBs (Multilateral Development Banks) is needed to de-risk and reduce the cost of capital in order to leverage private sector (mainly sponsor equity) investment. As projects progress to the construction phase, there is scope for more private sector debt and equity finance. At the operational stage, where returns are proven and risk is much reduced, there are significant opportunities to securitise and refinance projects and bring in institutional investors with long-term debt finance. The higher-risk, early-stage concessional climate finance can then be recycled into other projects.

Attracting institutional investors to African infrastructure projects and bringing that source of financing to scale will also require developing new financial instruments that institutional investors are willing to hold. Options include investing directly in Africa infrastructure, increasingly as partners in infrastructure funds, or leveraging Africa's pension funds. For instance, Sub Saharan African pension funds have about \$380 billion in assets under management that could be tapped as a source of investment for infrastructure. Pension funds are already investing in infrastructure projects and service delivery to the poor in countries such as Cape Verde, Kenya, South Africa, Swaziland, Tanzania and Uganda. By leveraging private and public funds, projects are able to increase both the sources and overall levels of financing.

Another promising way of scaling institutional investment is to expand investment options through financial instruments such as green bonds. Tying such bonds to African infrastructure creates an important opportunity, given their potential to offer institutional investors low-risk investments at scale. Securitising an asset pool of African infrastructure and issuing green bonds can transform Africa infrastructure projects into low risk, liquid assets that can be attractive to institutional investors. Green bonds backed by the credit rating of issuing institutions such

Investment in Climate-Resilient African Infrastructure

as the World Bank Group and the African Development Bank Group further reduce the risk of such bonds.

Achieving all this will require that African infrastructure is developed and viewed as an asset. This will require a package of reform and assistance including standardising project templates, improving the flow of information to investors on infrastructure projects, and regulatory reforms that reduce policy risk and provide the proper enabling and business environment for the private sector to invest.

Paris COP 21 and Beyond

In Paris, it was decided that the UNFCC/COP will be served by the Green Climate Fund, the Global Environment Facility (GEF), the Developed Country Fund and the Special Climate Change Fund administered by the GEF.

However, countries are not limited by the UNFCC in terms of which climate funds they can use to deliver their UNFCC financing commitments. In addition to the climate funds formally serving the UNFCC, there are the Climate Investment Funds as well as a number of bilateral funds such as the UK's International Climate Fund, Germany's International Climate Initiative and Norway's International Climate and Forest initiative, through which public climate finance will continue to be channeled. The World Bank Group and the AfDB Group have also committed substantial funds.

President Trump's decision to withdraw the United States from the Paris climate accord represents a decisive juncture in the world's effort against climate change. However, the international community will need to continue its tremendous efforts preparing for and mitigating climate change risks. Under the Paris accords, developed countries including the US were to contribute to a \$100 billion annual fund for developing countries by 2020. African countries especially need these funds to implement resilient infrastructure solutions and expand clean energy. By 2050, the costs of adapting to climate change may

cost the continent as much as \$50 billion a year, according to the United Nations Environment Programme. While the US's absence will impact other countries' attempts to tackle climate change, overall the impact could be mitigated given the international efforts to keep global warming below 2°C this century. Moreover, most American private sector emitters are going to change their behavior towards reduced emissions anyway for a variety of reasons. There are a lot of direct benefits from doing so in terms of reduced pollution and increased energy efficiency and many of them actually see this as an important global problem. We already see a huge amount of action taking place in the US, in industries, cities and some states.

Furthermore, the loss of a fraction of US official development aid associated with climate change might focus African countries on looking for private sector and domestic solutions in addition to international solutions. Many private sector companies are already investing in African resilience projects and we should expect a substantial increase in the coming years. We must also remember that many of the driving forces for that economic transition in Africa actually originate outside of Africa, in places like China, Europe and the US, either through demand for Africa resources or through the direct establishment of farming and bio-energy enterprises on the African continent.

Now, a growing number of analysts view climate risk as a business opportunity, as reflected by the demand for private "climate resilience solutions" or products and services that protect buyers from a range of climate risks. These include:

- Resilient building materials and services
- Renewable energy sources
- New weather and climate analytics
- Climate-resistant seeds, crops, and farming methods
- Financial and insurance products that incentivize resilience building

- Water-efficient technologies
- Flood control and site drainage
- Efficient air conditioning services
- Back-up power generation systems
- Insulation against heat

And many other products and services, these solutions are a major opportunity for large and small firms across the planet.

There are many emerging infrastructure and agriculture resilience opportunities, solutions and tailored insurance to improve climate resilience in developing countries. However, they need to be both scaled-up and accelerated to meet the challenges.

- **Financial, insurance and investment methodologies and products.** Debt instruments such as the green/climate bonds mentioned above could support investments in resilience. Credit rating agencies now recognise climate change as a material risk, a fact that will incentivise climate resilience considerations in private decision-making. Catastrophe bonds have been successfully deployed as risk transfer instruments, and new types of climate risk insurance vehicles and risk assessment schemes are entering the market. There is also early and growing interest among venture capital and private equity investors in companies that produce climate-resilient products.
- **Africa climate resilience project preparation facility.** Provided it is adequately financed with grant, concessional and private sector resources, the facility launched at COP 21 in 2015 by a World Bank-led consortium could play an important role in facilitating the development of climate-resilient infrastructure. It could cater to the specific needs of different sectors or different stages of the infrastructure development cycle. For example, the facility could provide support to climate-resilient infrastructure master plans or to the integration of climate resilience into individual projects.

- **Public-private partnerships for resilient infrastructure.** Public-private partnerships are increasingly common in water, transportation, telecommunications, and energy infrastructure. The demand for greater resilience in PPPs drives the demand for new metrics, stress tests, climate resilience materials, risk sharing, flood maps, and other measures needed to assure investors that PPP designs address climate resilience.

- **Increased climate change risk disclosure.** With increasing climate variability, the pressure for increased climate risk disclosure will mount, generating opportunities for firms that specialize in reporting and disclosure activities. Currently, few companies, investors, or lenders disclose their climate risks with adequate rigor.

- **Resilience in energy.** Clean and renewable energy sources, such as wind and solar installations, both contribute to mitigation and are part of climate resilience. These installations and more conventional energy sources need resilient measures, particularly along coasts and in flood zones. Resilience also requires adequate back-up power generation, distribution, micro-grids, storage facilities, and disaster recovery. Providing universal access to electricity in Africa using clean energy would increase emissions by only a further 1%.

- **Resilience in transport.** Climate change is likely to shorten the road rehabilitation life-cycle, which, in addition to maintenance, usually entails resurfacing every 20 years. In the worst climate scenarios compared with historical climate conditions, stress imposed on roads by precipitation can lead to rehabilitation costs that are 10 times higher. Modifying the design in response to an anticipated higher temperature is a low or no-regret option for paved roads. Not doing so may result in the need for more frequent repair of damages related to higher temperature.

Investment in Climate-Resilient African Infrastructure

- **Resilience in water.** Failure to integrate climate change in the planning and design of power and water infrastructure could entail significant losses of hydropower revenues and increases in consumer expenditure for energy.
- **Climate-smart agriculture.** The impacts of climate change on Africa's agriculture are already being felt and will become increasingly severe going forward. A rise in average temperatures of 2 degrees Celsius by the middle of the century is projected to reduce expected yields by up to 20%. Vulnerability to climatic shocks is especially acute in dry land areas which have a fragile ecology that limits agricultural potential. In these areas, land has already been degraded—de-forested, eroded, and nutrient depleted—over time, increasing its sensitivity to weather-induced shocks and reducing the resilience of rural populations and ecosystems. Africa's agriculture will need to adapt and improve its resilience to climate change. Climate-smart production technologies and agro-forestry, livestock and pasture management not only reduce the impact of climate change but also reduce the net emission intensity of greenhouse gases associated with agriculture, and have the added advantage of sucking carbon out of the atmosphere and storing it in trees and soils.
- **Urbanization.** Africa's expanding cities will be increasingly exposed to climate shocks. Africa is already the fastest urbanizing continent, and the rate of urbanization is likely to increase over the next 10-20 years. To avoid locking cities into an irreversible pattern of vulnerability to rising sea levels, floods and other shocks, climate resilience will need to be built into the design and development, not just of cities themselves, but also of the wider range of urban infrastructure that is instrumental to their growth and sustainability, including water supply, drainage, energy, and transport.

- **Examples of investment potential.**

According to the World Bank's Africa Climate Business Plan, these climate specific investments amount to \$5-10 billion per year. For instance, the estimated total investment potential for the climate-smart needs of Côte d'Ivoire, Kenya, Nigeria, and South Africa is \$783 billion by 2030. Sixteen percent of this is for renewable energy generation (\$123 billion), while well over half (\$499 billion) is for the transportation sector. By 2030, the commercial investment potential in the construction of low-carbon buildings is estimated at nearly \$153 billion.

Conclusion

Africa's extreme vulnerability to the impacts of climate change threatens to undermine major developmental gains, exacerbate existing weaknesses, and hamper growth prospects. Business as usual is not an option. There is concerted action required on better managing climate risks, moving Africa to a more climate-resilient future that is so critical for its poverty alleviation efforts and growth; and mainstreaming of climate action within the development dimension. Accelerating investment in climate-resilient infrastructure is an immediate priority.

The Paris Agreement increases opportunities for climate-smart investment **“The Paris Agreement is a historic turning point, as it sends a decisive market signal that the transition to a thriving clean economy is inevitable, irreversible, and irresistible.” — We Mean Business Coalition.** The private sector itself played an important role in urging governments to reach the Paris Agreement. The World Economic Forum's CEO Climate Leadership effort includes CEOs from over 70 companies and 20 economic sectors with operations in more than 150 countries and territories that generated over \$2 trillion of revenue in 2014. It, along with other private sector groupings, demanded bold government action to reach an agreement at COP 21. Now they are pushing the

implementation agenda forward to ensure that the necessary financing for climate resilient infrastructure in Africa is raised and the crucial services they provide can meet the challenges that lie ahead. Private investment in climate solutions is set to grow in Africa and the rest of the world.

President Trump's decision to withdraw the United States from the **Paris climate accord** represents a decisive juncture in the world's effort against climate change. However, the international community will need to continue its tremendous efforts preparing for and mitigating climate change risks. Under the Paris accords, developed countries including the US were to contribute to a **\$100 billion** annual fund for developing countries by 2020. African countries especially need these funds to implement resilient infrastructure solutions and expand clean energy. By 2050, the costs of adapting to climate change may cost the continent as much as **\$50 billion a year**, according to the United Nations Environment Programme. While the US's absence will impact other countries' attempts to tackle climate change, overall the impact could be mitigated given the international efforts to keep global warming below 2°C this century. Moreover, most American private sector emitters are going to change their behavior towards reduced emissions anyway for a variety of reasons. There are a lot of direct benefits from doing so in terms of reduced pollution and increased energy efficiency and many of them actually see this as an important global problem. We already see a huge amount of action taking place in the US, in industries, cities and some states.

Furthermore, the loss of a fraction of US official development aid associated with climate change might focus African countries on looking for private sector and domestic solutions in addition to international solutions. Many private sector companies are already investing in African resilience projects and we should expect a substantial increase in the coming years.

We must also remember that many of the driving forces for that economic transition in Africa actually originate outside of Africa, in places like China, Europe and the US, either through demand for Africa resources or through the direct establishment of farming and bio-energy enterprises on the African continent."

In this context, the Third Africa Climate Resilient Infrastructure Summit III aims at debating the challenges and issues identified in this background document and to suggest to the representatives of the member states of the African Union, the private sector and the international community, practical solutions and technical cooperation from the private sector, technology providers, development partners, consultants and service providers. The summit provides a unique opportunity to focus on the:

- Challenges of preparing infrastructure projects for a changing climate
- Climate Risks and their implication on infrastructure
- Climate Solutions and Innovation
- Climate resilient infrastructure implementation and public -private financing
- Risks of failed or inefficient infrastructure from climate