

Climate Change Across Africa: The Challenges and Opportunities for Mature Businesses and New Ventures

David E. McClean, PhD

Lecturer, Rutgers University (Newark) and

Member of the Board of Directors

Impact@Africa (Nairobi, Kenya)

www.impactatafrica.org

Africa: The Impact of Climate Change

The growing negative impact of climate change across Africa is expected to be substantial. The Sahel, with its growing population, is also already experiencing *shrinking* natural resources, including land and water resources. The western Sahel is expected to experience the strongest drying, with a significant lengthening of dry spells. Central Africa will likely see a decrease in the length of wet spells, but an increase in heavy rainfall. West Africa, designated by the Intergovernmental Panel on Climate Change (“IPCC”) as “a climate change hotspot,” will likely see crop yields and production substantially negatively impacted. Heading south, the western part of southern Africa is set to become drier, with increasing droughts and heat waves. Models indicate that southern Africa will experience a decrease in precipitation of about twenty percent and increases in the number of consecutive dry days in Namibia, Botswana, northern Zimbabwe and southern Zambia. This will cause reductions in the volume of the Zambezi basin projected at up to ten percent.¹ (Eight countries share the Zambezi Basin watershed. Zambia and Zimbabwe have most of the watershed within their borders.)²

With crop failures will come dead livestock, disease, misplaced populations, and substantial migrations. As is to be expected under such conditions, the increased desperation to try to preserve lives and livelihoods will lead to greater political tensions and instability, which in turn will likely take the form of belligerence as people cross political and “territorial” boundaries in search of or to attempt to preserve or to claim water sources, watersheds, water rights, arable lands, and all forms of property. Indeed, this is already happening.³

Massive investments in the continent coming from outside (that is, Foreign Direct Investment or “FDI”) may actually help to stabilize post-impact conditions, as the Chinese, Europeans and others invest in countermeasures to preserve their own investments, substantially investments in Africa’s natural

¹ <https://www.un.org/africarenewal/magazine/december-2018-march-2019/global-warming-severe-consequences-africa>

² <https://quod.lib.umich.edu/j/iii/4750978.0015.208/--sustainable-water-management-in-the-zambezi-river-basin?rgn=main;view=fulltext>

³ The climate-change-induced evaporation of Lake Chad, for example, has caused stress across political borders. The drying lake is causing tension among communities around Lake Chad. There are repeated conflicts among nationals of different countries over control of the remaining water. “Cameroonians and Nigerians in Darak village, for example, constantly fight over the water. Nigerians claim to be the first settlers in the village, while Cameroonians invoke nationalistic sentiments, since the village is within Cameroonian territory. Fishermen also want farmers and herdsmen to cease diverting lake water to their farmlands and livestock.” See <https://www.un.org/africarenewal/magazine/april-2012/africa%E2%80%99s-vanishing-lake-chad>

resources, most notably fossil fuels.⁴ Internally, there are many opportunities to address climate-change-induced challenges, and these opportunities are being and will continue to be created by Africans themselves, of necessity, just as Africans themselves prefer (recalling the colonial era). In creating better access to fresh water, in creating green energy alternatives (Africa never really had the coal and fossil fuel energy footprint of Europe and the United States (and of late, China and India), and in training and educating tens of millions of young Africans (41 percent of the continent (of some 1.3 billion people) is under 15, and 19 percent between 15 and 24)^{5,6} to build economies around sustainable development principles, opportunities abound, as do the challenges.

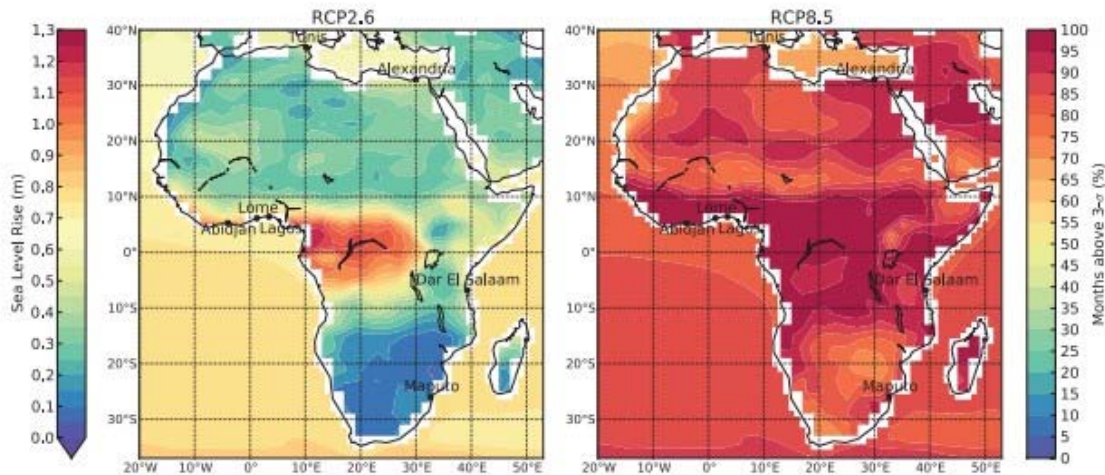


Figure ES.1 Projections for sea-level rise above present-day levels (ocean – left legend) and warming compared to present-day extremes (land – right legend) for 2100. A 2°C warming scenario (RCP2.6) is shown on the left; a 4°C warming scenario (RCP8.5) is shown on the right. Source: PIK; (Schellnhuber et al., 2013)

Sourced from: Africa's Adaptation Gap - Technical Report

As we can see from the unprecedented recent flooding in Mozambique, following Cyclone Kenneth (April 2019) (which followed Cyclone Idai in March 2019) and the impact of recent storms in KwaZulu-Natal (also in April 2019), as just two examples, there is a critical need for infrastructure and stronger institutions in order to better recover from such events. (Cyclone Kenneth was the strongest tropical cyclone to make landfall in Mozambique, since modern recordkeeping of such events began, and its ferocity is on the order predicted by climate change models.) Without better infrastructure and stronger institutions (from government to civil society institutions, including commercial actors), it is hard to see how Africa will be able to address successfully the coming impacts that climate change is predicted to deliver, especially in view of the challenges that obtain apart from climate change.⁷ After similar storm damage in 2017, the Premier of KwaZulu-Natal said "The recent floods bring home the fact that climatic change will have a devastating effect on the infrastructure and many households unless action is taken to mitigate it."⁸

⁴ <https://www.chinadialogue.net/article/show/single/en/10799-Are-China-s-energy-investments-in-Africa-green-enough->

⁵ <http://worldpopulationreview.com/continents/africa-population/>

⁶ <https://www.afidep.org/our-work/population-change-sustainable-development/current-programmes/regional-analysis-youth-demographics/>

⁷ <https://www.dailymaverick.co.za/article/2019-04-25-full-extent-of-kzn-storm-damage-still-unknown-as-death-toll-rises/>


⁸ <https://www.traveller24.com/Explore/Green/global-warming-effects-are-realities-kzn-premier-points-to-climate-change-as-cause-of-storm-20171013>

Commercial Sector Involvement in Mitigation and General Response

Neither governments, nor multinational organizations will be able to address the impacts alone. The for-profit (commercial) sector can and will have a substantial role to play. Therefore, it is critical, *now*, to provide businesses across the continent with the capital and other resources needed to become successful. Indeed, one of the most important things that must happen in order to blunt the impacts of negative climate-related events, across the continent, is the strengthening of local and national economies, and that will be done by increasing the number of going concerns and strengthening the business sector in general, including incubating and accelerating the ramp-up of new ventures, and developing a much larger base of successful entrepreneurs. The more successful the business sector, the greater the number of people who will be employed, and the larger the tax base will become. That larger tax base will be critical to providing governments with the public funds needed to address the impact of climate-change-related events, from droughts to floods (including soil salinization) to wind-related storm damage.

Of course, African countries are not alone as regards this need. All countries will face similar impacts, to one degree or another, and even the most wealthy will find their budgets stretched – in some cases to the limit – in addressing climate-change-related damage; and all of this will be happening in an economic environment in which insurers and reinsurers are expected to withdraw, leaving governments, private institutions, and citizens to “self-insure.” In richer countries this can be highly destabilizing and economically depress regions; in poor countries the financial impacts can be devastating. So, the need for innovations don’t point to new technologies alone, but to all sorts of non-tangible innovations, such as involving insurance, e.g. the spreading of risk outside of traditional insurance arrangements, and in new methods to help “climate proof” local communities.

Even where there is the capital to do so, building fossil fuel plants to provide electricity across Africa would only accelerate greenhouse gas production, and this is one of the criticisms leveled at Chinese infrastructure financing in Africa today, which has been skewed toward fossil fuel plant construction rather than green energy projects.⁹ Therefore, it is not an option with a future in many parts of the continent, nor should it be. Africa is likely to generate a very substantial percentage of its future energy needs from solar, wind, hydro, and ocean turbine technologies, as is envisioned by the African Union in



One of the most important things that must happen in order to blunt the impacts of negative climate-related events, across the continent, is the strengthening of local and national economies, and that will be done by increasing the number of going concerns and strengthening the business sector in general, including incubating and accelerating the ramp-up of new ventures, and developing a much larger base of successful entrepreneurs.

⁹ <https://www.chinadialogue.net/article/show/single/en/10799-Are-China-s-energy-investments-in-Africa-green-enough->

its “Agenda 2063” and in the United Nations Development Programme’s Sustainable Development Goals (“SDGs”).^{10,11} The commercial opportunities range from manufacture to maintenance & modification to education on the uses of these technologies, which should provide many jobs and entrepreneurial opportunities across the continent, both directly and indirectly. One would expect unanticipated, ancillary “cottage industries” to emerge along side them.

Solar power has immediate impacts on households that are completely “off the grid.” Solar panels can provide electricity to small villages, allowing them to have reliable communications with the outside world, including internet access, and devices of all kinds requiring electricity to operate – all with a near-zero carbon footprint. Solar-powered pumps are already being sold to small farms and households so that they can retrieve water from wells, water needed to irrigate and to service common household needs. The Nairobi-based SunCulture (www.sunculture.com) manufactures such pumps. The needs of small farmers in Africa are many. They face the typical problems of small farms in certain zones, including unreliable rainfall, low crop yields, high energy costs, lack of access to modern farming technology and difficulties accessing capital. According to SunCulture, in Kenya there are some 500,000,000 hectares (or 1,235,552,900 acres) of arable land, but only 17% is suitable for rain-dependent agriculture. The rest of the land requires irrigation solutions. Gas, electric, and manual pumps are presently available in the market, but the effectiveness of these technologies is constrained by high input costs (fossil fuels, for example) and labor inefficiencies. What’s true in Kenya is true in many other places in Africa.

Here is where the problem of irrigation, the problem of climate change, and the problem of a very sparse electric grid converge to suggest a commercial solution. Africa may not have fossil fuel-based or nuclear power plants. But it does have wind and sun, and so Africa need not be *retrofitted* for clean energy; it need only be *fitted* with it.

Targeted solutions such as SunCulture’s solar pumps are ready to be realized across the continent by innovative entrepreneurs and by existing, mature businesses. If necessity is the mother of invention, so is crisis – and sometimes the innovations sparked by crisis can lead to extraordinary and long-lasting benefits. According to The Brookings Institution, “There is a consensus in Africa that agriculture is one of the keys to achieving sustainable and inclusive growth there. Most of Africa’s population and its poor depend on agriculture, so this sector can provide potentially significant gains. Agriculture also has the potential to become one of the growth engines of the continent, help Africa’s industrialization through agro-processing and agro-business, and reduce the dependence on the services sector, which is currently the main driver of growth. Because of these advantages and despite its current low production, its high poverty, and the looming threat of climate change, Africa is uniquely placed to be a rising agricultural leader.”¹²

There are opportunities in all sectors for businesses that will serve to address negative climate impacts, including:

¹⁰ <https://au.int/agenda2063/goals>

¹¹ <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-7-affordable-and-clean-energy.html>

¹² <https://www.brookings.edu/blog/africa-in-focus/2015/11/05/what-do-we-know-about-the-chinese-land-grab-in-africa/>

- Logistics companies that can move people and goods from climate impacted events;
- Packaging companies that make and/or distribute water-tight containers in which to place goods and equipment in storm and flood zones;
- Building contractors that specialize in waterproofing and raising structures above flood levels;
- Mobile food services;
- Disaster recovery experts and consultants;
- Livestock logistics companies;
- Water purification companies;
- Companies that specialize in mold abatement and post-flood restoration;
- and many others.

Access to Capital and Public-Private Cooperation

Yet such businesses will not stand much of a chance for success without clients and customers, and it is unlikely that average citizens will be able to provide the revenue streams needed for them to remain in the black, at least in certain cases. In some cases, private-public partnerships will be needed in order to assure that these businesses will be there when the need arises. Beyond this, for these businesses to grow and thrive, they will need ready access to capital. As already mentioned, a lot of new capital is being deployed in Africa from China. Also, some of the growing base of capital being directed through impact investing conduits has a climate change focus, and the Global Impact Investing Network (“GIIN”) tracks climate-associated impact investment.¹³

And then there is the issue of the businesses themselves surviving climate-related events. In a study undertaken by Florence Crick, a research officer at the London School of Economics’ Grantham Research Institute on Climate Change and the Environment, and Shaikh Eskander, a visiting research fellow at Grantham, there are certain characteristics of businesses that are able to survive climate-related events.¹⁴ As Crick and Eskander point out, “A critical issue is the extent to which private actors, and especially businesses, are able to adapt to climate risks. In Africa, the private sector generates two-thirds of the continent’s investment, 75 per cent of its economic output and 90 per cent of its formal and informal employment.” This is important to keep in mind, as there is a widespread misconception that adaptation and mitigation resources will come from government coffers alone. Crick and Eskander performed a survey of 325 businesses in the agriculture, trade, and processing sectors in the semi-arid regions of Senegal and Kenya. They noted that about half of the businesses surveyed have adopted a plan to maintain business operations at existing levels, “for example by taking out a loan or switching to a different crop or commodity.” They refer to this as “sustainable adaptation.” They note that other businesses, about a quarter of those surveyed, “have resorted to business contraction strategies, such as reducing the number of employees or selling assets at a loss, in the face of extreme events.” Crick and Eskander call this approach “unsustainable adaptation.”

¹³ <https://thegiin.org/climate-investing-track>

¹⁴ <https://blogs.lse.ac.uk/africaatlse/2018/06/20/how-businesses-in-sub-saharan-africa-are-adapting-to-climate-change/>

Yet experience is a great teacher. The businesses Crick and Eskander surveyed have had to endure and respond to climate-related events over the five years preceding the study. However, they noted that “the more frequent the occurrence of extreme events the more the balance shifts from sustainable [adaptation] towards unsustainable adaptation. This suggests that there is a point where [their] ability to respond gets eroded when they face too many extreme events and that there may be limits to how effective sustainable adaptation can be.” They point to the need for governments to “provide initiatives that specifically support businesses’ ability to adapt to the impacts of climate change while also addressing the broader structural and development deficits that hinder business development. For example, there needs to be greater coordination of national adaptation policies and business development policies. In addition, governments need to broaden finance opportunities for developing businesses to more inclusively target the diversity of private actors in semi-arid regions . . . Governments should also provide climate information services and adaptation options targeted to the needs of businesses in semi-arid regions.”

Note: The analysis and conclusions in this essay are the author’s own, and do not represent the views of Impact@Africa or any other organization or institution.