CONFRONTING CLIMATE CHANGE:

Africa's leadership on an increasingly urgent issue

Chapter 5

African leadership in a time of climate risk

ISSUE BRIEF FROM THE AUTHOR

RUSSELL BISHOP
Senior Research Fellow, Overseas Development Institute
Senior Economist, The New Climate Economy

Africa's "growth miracle" and its associated resurgence has been challenged. Plunging commodity prices related to a global economic slowdown have dampened economic prospects. Human development indicators remain well below developing-country averages. At the same time, climate change and other environmental stresses are taking an increasing toll on many countries. For example, the recent drought in Southern Africa has meant that currently over 20 million people require emergency assistance in Malawi, Zimbabwe, Mozambique, Madagascar, Lesotho, and Swaziland.

In a sample of 30 African countries, two-thirds are warming faster than the world as a whole—a trend expected to continue in coming decades.

Climate risk is a challenge to both current and future development progress. In a sample of 30 African countries, two-thirds are warming faster than the world as a whole—a trend expected to continue in coming decades. Predictions of future climate change are inherently uncertain, and the future impacts are difficult to predict. This places emphasis on acting early and ensuring that systems are in place to deal with negative climate events.

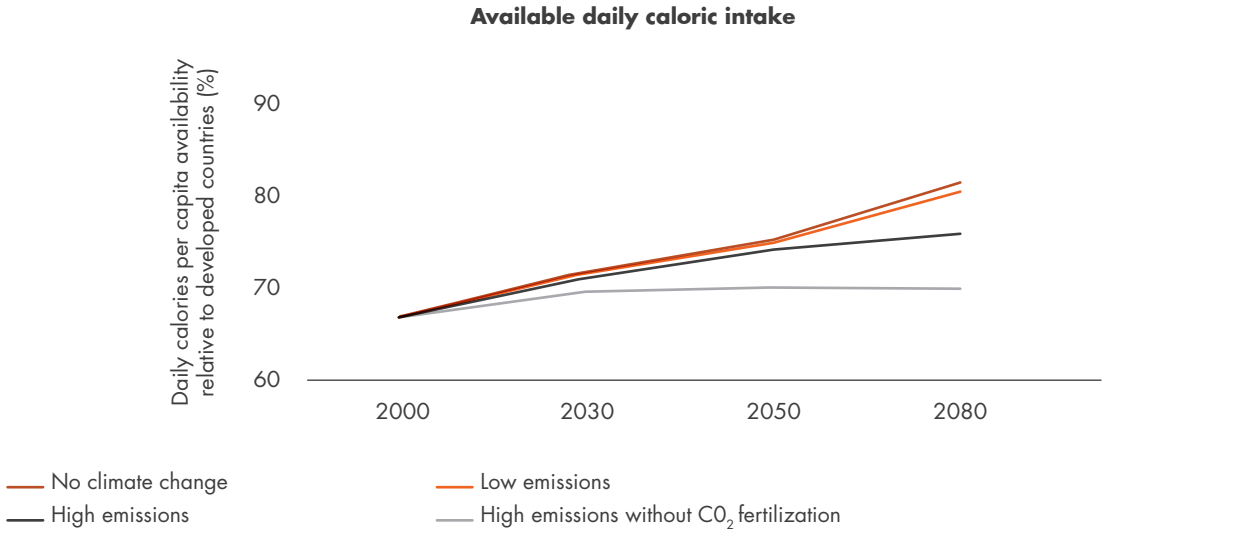
There will also be significant economic implications, particularly in agriculture, where the poor will feel impacts disproportionally. Estimates suggest that yield and output losses for major crops could be 20–30 percent or more by 2050. If the transformation of the agriculture sector is a pre-requisite for realizing poverty reduction and wider structural change, responding to climate risk is crucial. The huge variation of different climatic conditions across the continent—arid, tropical, and temperate climates—necessitates tailored local responses.

National and international responses to climate change so far

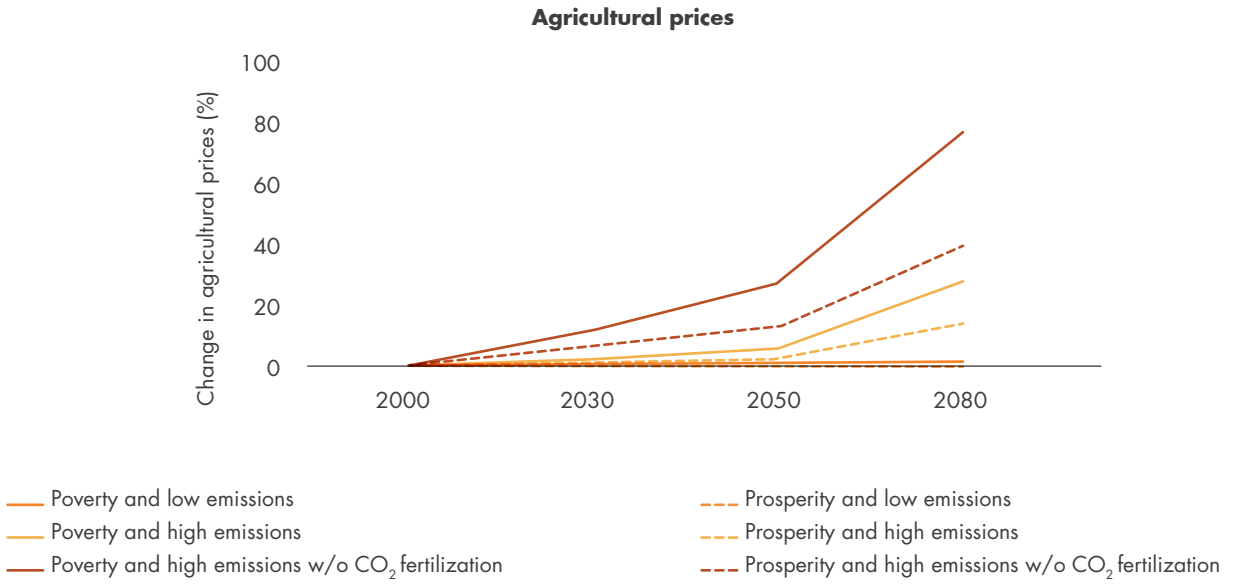
As we enter 2017, there has been global cooperation to deal with climate change, which complements the broader Sustainable

FIGURE 5.1. FOOD AVAILABILITY WILL FALL AND AGRICULTURAL PRICES WILL CLIMB IN SUB-SAHARAN AFRICA UNDER CLIMATE CHANGE

Climate change will have powerfully adverse effects on agricultural and related activities. Temperature changes, natural disasters, and soil degradation—among other obstacles—will stifle agricultural production. This trend is a particular problem for the poor, many of whom rely heavily on subsistence agriculture and often face food insecurity without these complicating factors. The two graphs below show the anticipated drop in caloric intake due to climate change complications as well as the likely increase in food prices, which compounds the food insecurity facing the poor.



Note: Results are based on simulations from the Global Biosphere Management Model (GLOBIOM) in a scenario with large population growth and little economic growth.



Note: According to the World Bank, the "prosperity" scenario assumes extreme poverty eradication and shared prosperity by 2030, slower population growth in the developing world, and severely increased education and labor productivity. The "poverty" scenario" assumes continued high population growth, high inequality, and low economic growth.

Source: Havlík, P., Valin, H., Gusti, M., Schmid, E., Leclère, D., Forsell, N.; Herrero, M., Khabarov, N., Mosnier, A., Cantele, M. & Obersteiner, M. (2015), Climate change impacts and mitigation in the developing world: An integrated assessment of the agriculture and forestry sectors, Policy Research Working Paper 7477, Washington DC: World Bank Group.

Available at: http://documents.worldbank.org/curated/en/866881467997281798/Climate-change-impacts-and-mitigation-in-the-developing-world-an-integrated-assessment-of-the-agriculture-and-forestry-sectors.

Small-scale, high-impact policies for fighting climate change in 2017

Ousseynou Nakoulima
Director of Country Programming, Green Climate Fund

The proliferation of small-scale, high-impact climate actions can drive a dramatic shift in Africa's response to climate change, provided policymakers set up the right incentives. And in 2017 the continent will show it is on its way.

The rapid growth of African urban centers like Nairobi, Lagos, or Abidjan opens an opportunity for the development of **distributed solar generation**, thereby accelerating access to clean electricity as experienced by Mexico and other large cities in Latin America. In rural areas too, electricity generation from mini-grids is picking up as distribution to rural communities from the national grid is generally not financially attractive for power utilities. *The Economist*[1] indicated recently that the number of households receiving electricity through off-grid solar PV could double in 2017.

Similar developments are happening in agroforestry. According to the Intergovernmental Panel on Climate Change, agriculture, forestry, and other land use accounts for 21 percent of greenhouse gas emissions, and its exposure to climate change represents a significant risk to food security, especially in Africa. Solutions are shaping up through integrated approaches that combine agriculture and conservation of forests with a reliance on small holder farmers. Political will is there: Côte d'Ivoire, for instance, is committed to agriculture with zero deforestation after its forests have been depleted from 12 million to 2 million hectares in the last 50 years.

The number of households receiving electricity through off-grid solar PV could double in 2017.

To turn these actions into a green revolution, Africa needs to leverage the growing ecosystem of local financial institutions. Commercial bank networks are expanding rapidly (15 percent per annum for retail banking according to the initiative *Making Finance Work for Africa*). So are specialized investment funds backed by reputed limited partners, like Althelia in Madagascar. **Regulators and banking associations** have a key role to play in this process. First, they can define standards for small-scale green investments and treat them favorably. Second, they should advocate for fiscal incentives to aggregators and financial vehicles so that cash flows resulting from these activities can be pooled efficiently to entice institutional investors. Finally, they should promote the adoption of best practices to attract international climate finance flows. The establishment of a green credit policy in China in 2007 and the sustainable banking principles adopted in Nigeria in 2012 are examples African regulators can draw upon.

Such measures have the potential to drive a paradigm shift in climate action in Africa.

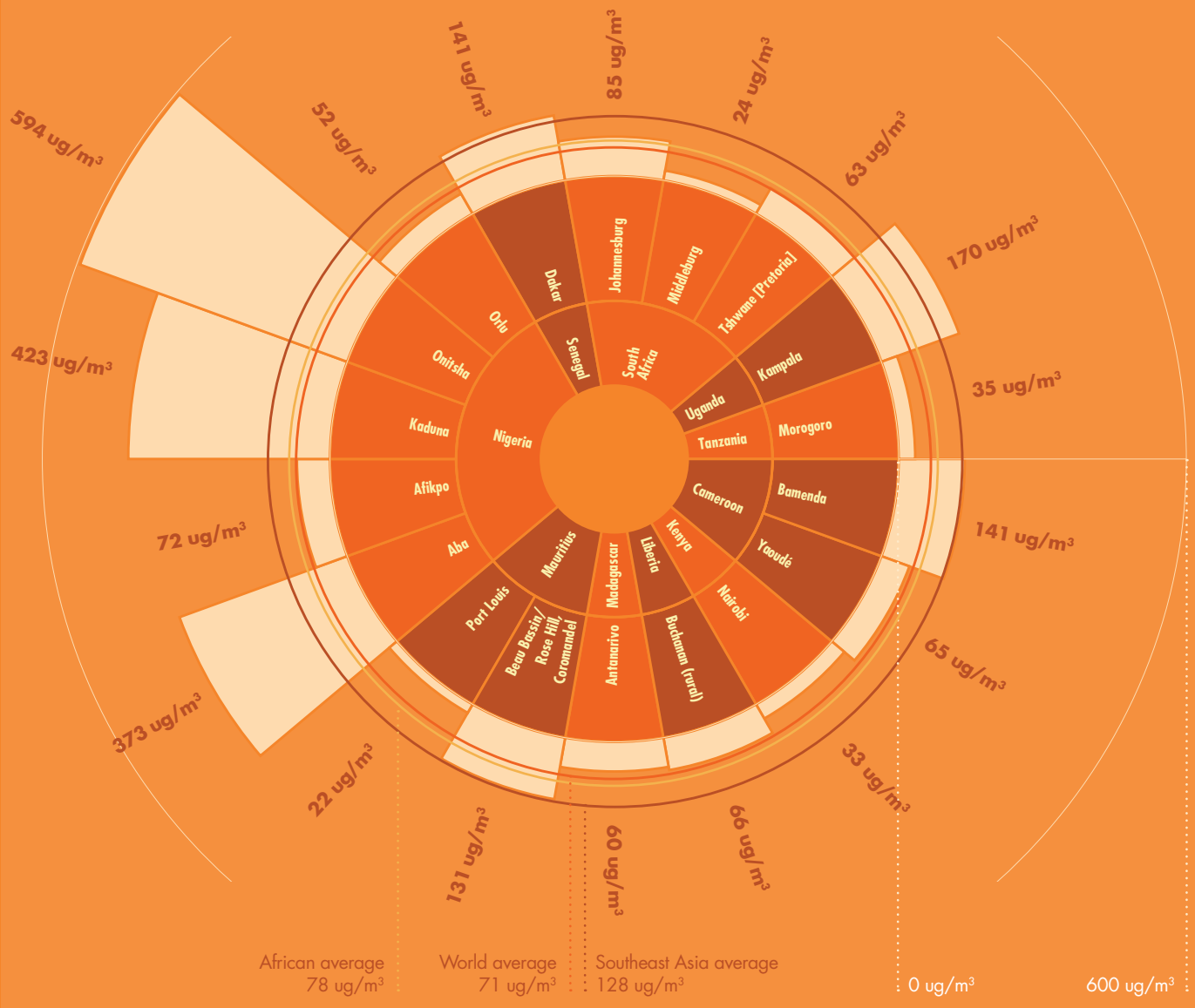
[1] "Africa Unplugged: Small-scale Solar Power Is Surging Ahead." *The Economist*. The Economist Newspaper, 29 Oct. 2016.

FIGURE 5.2.

POLLUTION IN SELECT AFRICAN CITIES

ANNUAL MEAN CONCENTRATION OF PARTICULATE MATTER

Pollution is becoming problematic in many African cities, though its prevalence varies from city to city. The following shows the annual mean concentration of particulate matter from selected African cities. In many cities the annual mean concentration of particulate matter smaller than 10 microns in diameter (PM10), a measure of pollution, is higher than the average city globally as well as similarly developing cities in Southeast Asia. Notably, population doesn't always determine pollution levels; for example, Nairobi, with 3.14 million citizens has far less particulate matter than Kampala's 1.6 million. In the below image the concentration of air pollutants are given in micrograms per cubic meter of air (ug/m^3).

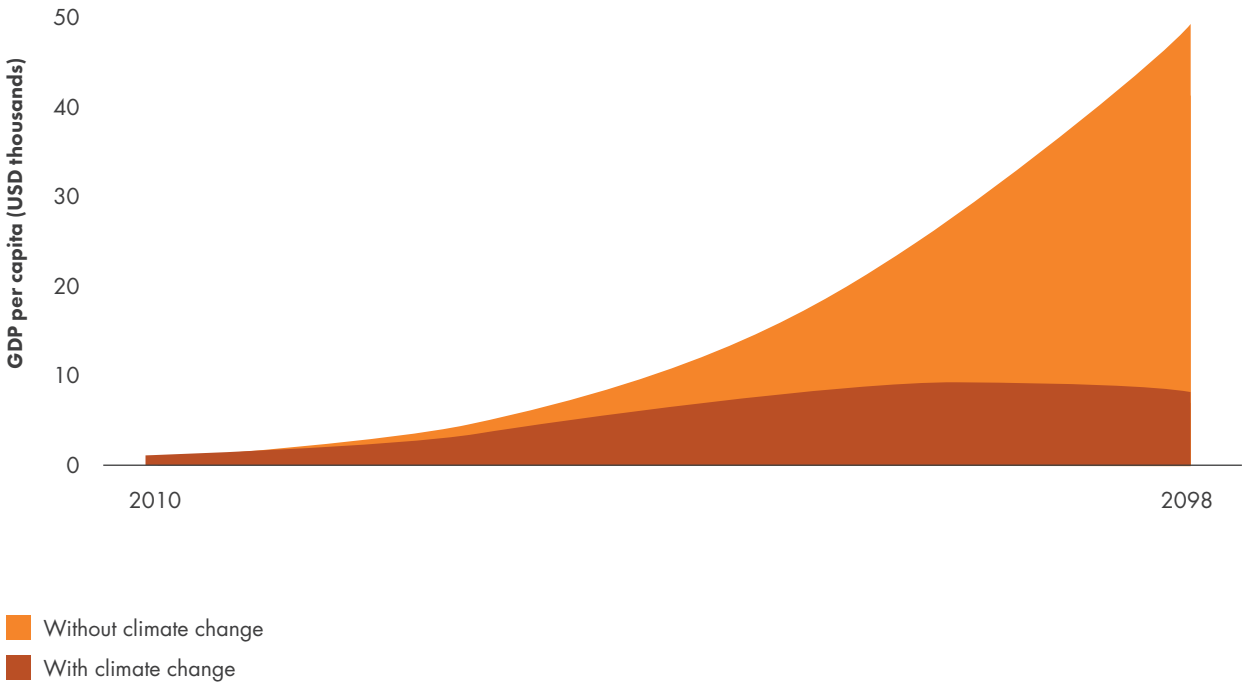


Note: The concentration of air pollutant is in micrograms per cubic meter of air (ug/m^3).

Source: African Economic Outlook 2016 (available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEO_2016_Report_Full_English.pdf) Ambient Air Pollution Database, WHO, 2014. Accessed on November 27, 2016. Primary source of data are official reporting from countries to WHO, official national/subnational reports and national/subnational web sites containing measurements of PM10 or PM2.5 and the relevant national agencies. Furthermore, measurements reported by the following regional networks were used: Clean Air Asia for Asia, and the Air quality e-reporting database from the European Environment Agency for Europe. In the absence of data from the previous sources, data from (a) U.N. agencies, (b) development agencies and (c) articles from peer reviewed journals and (d) ground measurements compiled in the framework of the Global Burden of Disease project were used. The dates for the data are not uniform and range from 2008-2014.

FIGURE 5.3. PREDICTED EFFECTS SUB-SAHARAN AFRICAN COUNTRIES' GDP PER CAPITA (BY YEAR 2098)

Sub-Saharan Africa is predicted to bear the brunt of climate change going forward. Not only will this phenomenon create droughts, floods, famines, and other disasters, unsurprisingly, is it also predicted to greatly and negatively impact the region's economic growth. The below graph displays the dramatic difference in the region's average GDP per capita with and without climate change.



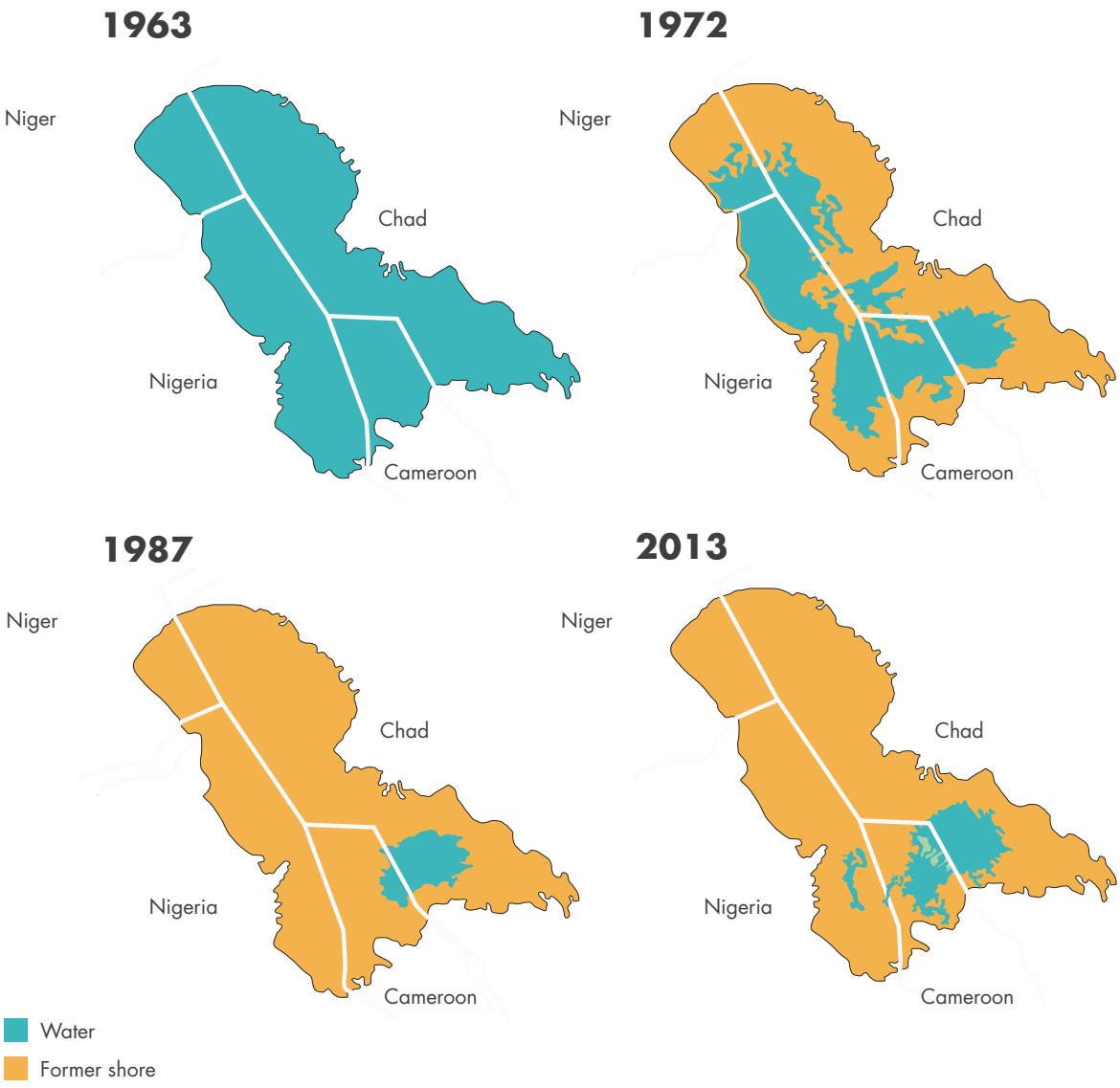
Note: Climate change as defined in these projections done by Marshall Burke, Sol Hsiang, Ted Miguel (2015) use scenarios that are "consistent with RCP8.5 'business as usual' climate change," which is defined by Riahi, K., Rao, S., Krey, V. et al. Climatic Change (2011) 109: 33. doi:10.1007/s10584-011-0149-y as a model that "combines assumptions about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements, leading in the long term to high energy demand and GHG emissions in absence of climate change policies. Compared to the total set of Representative Concentration Pathways (RCPs), RCP8.5 thus corresponds to the pathway with the highest greenhouse gas emissions.

Source: Data from Marshall Burke, Sol Hsiang, Ted Miguel (2015), used in their paper "Global non-linear effect of temperature on economic production," published in Nature. Data available at: https://web.stanford.edu/~mburke/climate/data.html.

Development Goals agenda. The international response to climate change negotiated in 2015—the Paris Agreement—came into force in November 2016. The Paris Agreement aims to keep global temperature rise this century to below two degrees Celsius above pre-industrial levels—a goal looking increasingly unlikely given the greenhouse gases already in the atmosphere. Over 100 countries, accounting for over 80 percent of global greenhouse gas emissions, have ratified the agreement. Each country has developed a unilateral national commitment on what each is willing to do, which if ratified is known as a Nationally Determined Contribution (NDC).

FIGURE 5.4. LAKE CHAD, CLIMATE CHANGE, AND VULNERABLE POPULATIONS

According to the United Nations Environment Program (UNEP), the "ecological catastrophe" that is Lake Chad has decreased from approximately 25,000 km^2 in 1963 to less than to less than 2,500 km^2, threatening the resources and livelihoods of the 50 million people (likely to double by 2030) that live there. Not only that, but due to insecurity from Boko Haram, there are nearly 2.8 million refugees displaced in the Lake Chad area and an estimated 9.2 million people in need of humanitarian assistance there. According to the UNDP Africa's Disaster Risk Reduction and Climate Change team leader, climate change can exacerbate current tensions and conflict. Radicalization arises from religious, ideological, economic, and historical situations where social, employment, poverty, and governance problems, among others, have created social exclusion and mistrust. He adds, "Climate change, on the other hand, affects our natural capital (water, food, land, forest, biodiversity, etc.). Compounded with more frequent occurrence of natural disasters (drought, floods, landslides, cyclones, etc.), it leads to disruption, as livelihoods are affected and local economic opportunities lost. The inability of fragile governments to meet the needs of their population or provide protection in the face of climate change-induced hardship can trigger frustration, lead to tensions between different ethnic and religious groups within countries and to political radicalization. This could destabilize countries and even entire regions."



Source: United Nations Environment Program and DIVA-GIS in Kingsley, P. "The small African region with more refugees than all of Europe." *The Guardian*. 26 November 2016. Available at: https://www.theguardian.com/world/2016/nov/26/boko-haram-nigeria-famine-hunger-displacement-refugees-climate-change-lake-chad.

Does climate change cause conflict?

A research paper, "Warming increases the risk of civil war in Africa," presented to the U.S. National Academy of Sciences claims that temperature rises in Africa have coincided with significant increases in the likelihood of war.[1] U.N. Secretary-General Ban Ki-moon has described the conflict in Darfur as the world's first climate change conflict.[2] The assumption is that water scarcity from changed rainfall patterns resulting from climate change contributed to the conflict in Darfur. This reflects findings that the incidence of conflict is likely to be higher in years of lower precipitation. Marshall Burke and his colleagues from U.S. universities published "the first comprehensive examination of the potential impact of global climate change on armed conflict in sub-Saharan Africa" using regression analysis of historical data, and find a relationship between past internal conflict in sub-Saharan Africa and variations in temperature (but not precipitation) showing "substantial increases in conflict during warmer years." In numerical terms, a 1 percent increase in temperature leads to a 4.5 percent increase in civil war in the same year and a 0.9 percent increase in the following year. By year 2030, based on averaged data from 18 climate models, this amounts to a 54 percent increase in armed conflict incidence in the region. The researchers argue that conflict will derive from economic uncertainties resulting from temperature-related yield declines in societies heavily dependent on agriculture. Research to date found that economic welfare is the single factor most consistently associated with conflict incidence.

But not everyone accepts the causal link between climate change and conflict with much of the doubt resulting from inherent complexities of defining conflict. With many political, social, economic and environmental factors playing either a preventing or a stimulating role, applying quantitative analysis to conflict and predicting the chance of future conflicts is problematic.

It is true that impoverishment and human insecurity may arise as a result of climate change, if preventive measures are not undertaken. But there is missing evidence that global warming directly increases conflict. The temperature has risen in the last three decades, but the number of conflicts has significantly dropped since. A prominent study by scholars from the International Peace Research

It is true that impoverishment and human insecurity may arise as a result of climate change, if preventive measures are not undertaken. But there is missing evidence that global warming directly increases conflict.

[1] Burke, Marshall B., Edward Miguel, Shanker Satyanath, John A. Dykema, and David B. Lobell. 2009. "Warming increases the risk of civil war in Africa." Proceedings of the National Academy of Sciences 106 (46): 10670-20674. http://www.pnas.org/content/106/49/20670.full.pdf.

[2] Ki-moon, Ban. 2007. "A Climate Culprit In Darfur." Washington Post, June 16. http://www.washingtonpost.com/wp-dyn/content/article/2007/06/15/AR2007061501857.html.

Vesselin Popovski

Professor and Vice Dean of the Law School,
O.P. Jindal Global University, Haryana, India

Institute, Oslo, claims that "the causal chains suggested in the literature have so far rarely been substantiated with reliable evidence."[3]

In my previous publications I argue that causes of conflict are primarily political and economic, not climatic. Warlords, who foster conflict, may exploit drought, flooding, starvation, agricultural, or natural disasters in their strategies, like they did in Somalia and Darfur. But what will drive their fight is not the rain, the temperature, or the sea level: They will always fight for goals such as power, territory, money, revenge, etc.

I question the idea that scarcity always leads to conflict. Scarcity of water or other resources might, on the opposite, encourage cooperation, as it has done in the Nile or in the Lake Chad Basin.[4] When people face climate dangers and scarcity, they may decide to fight, but similarly they may decide to co-operate. After the 2004 tsunami in Southeast Asia we witnessed more co-operation and peace in Aceh, not more conflicts.

Climate change will force people to move to less arid or drought-prone areas inhabited by other people, as predicted in the Horn of Africa. People have always moved to better livelihood places, either as a result of human or naturally induced pressures. The world has to be prepared to meet the challenge of human migration and dislocation, being those produced by civil wars or climate change. Operationally there is not much of a difference—humanitarian agencies need to offer to people on the move the same elements of survival and safety—food, shelter, medicines, trauma relief, etc. However, when addressing the root causes of human suffering, one should not confuse armed conflict and climate change. The causes of armed conflict are different from the causes of climate change and need to be addressed differently. But the consequences of the two types of disasters are similar—dislocated people—who need the same rescue.

The world has to be prepared to meet the challenge of human migration and dislocation, being those produced by civil wars or climate change.

Bradford Plumer notes that the idea that climate change will lead to widespread conflict and chaos around the world is increasingly employed as a means to convince people about climate change where other rationales have not been successful.[5] Further research is required to fully understand the relationship between climate change and conflict. The evidence will take many years to compile and the cooperation of experts across a range of disciplines is needed to reduce both conflict and climate disasters.

[3] Nordas, Ragnhild, and Nils Petter Gleditsch. 2007. "Climate change and conflict." Political Geography 26: 627-638. http://n.ereserve.fiu.edu/010034599-1.pdf.

[4] Notaras, Mark, and Obijiofor Aginam. 2009. "Sucking Dry an African Giant." Our World, Brought to you by United Nations University, March 23. http://ourworld.unu.edu/en/sucking-dry-an-african-giant.

[5] Plumer, Bradford. 2009. "Global Warring." *New Republic*, November 20. https://newrepublic.com/article/71332/global-warring.

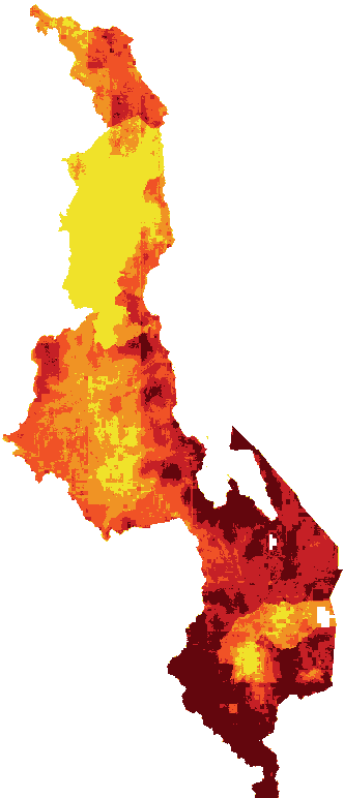
Africa as a continent is taking leadership internationally. Coordinating for progressive action, the African Union has supported coordinated negotiating positions through the Conference of African Heads of State and Government on Climate Change (CAHOSCC). In addition, African countries have been a leading voice in the Group of 77, the collection of over 130 developing countries, at the U.N. climate change conferences. Concerns for developing countries, however, remain—particularly around finance, technology transfer, and mechanisms for equitable contributions for dealing with climate risk.

Every African country other than Libya has submitted a pledge internationally.

There has also been national leadership from African countries. Every African country other than Libya has submitted a pledge internationally. Some countries have been taking climate change issues seriously in national development planning and implementation across multiple sectors for some time—Ghana, Ethiopia, Morocco, and South Africa stand out—and others can learn from their experiences. For example, Ethiopia in 2011 developed a Climate Resilient Green Economy Strategy and has since set up a climate finance fund within its ministry of finance for climate compatible investment. Part of the reason for this leadership is the recognition that climate action and wider approaches to development can go hand in hand—not just for adapting to climate change but also promoting low-carbon growth. Good policies that recognize the close links between economic, social, and environmental priorities can unlock major benefits over the long run.

FIGURE 5.5. TRACKING MALAWI'S VULNERABILITY TO CLIMATE CHANGE THROUGH ADVANCED TECHNOLOGY

While climate change remains a threat around the world, Africa is uniquely placed to unfortunately bear more of the effects than many other parts of the world. Thankfully, new technologies allow for policymakers to anticipate and thus mitigate potential disasters. One such tool is the Malawi Hazards and Vulnerability Atlas, which identifies communities vulnerable to a variety of climate-related disasters such as floods, droughts, fires, and diseases exacerbated by climate change such as malaria. The "Malawi Vulnerability Index" shows that high exposure, high sensitivity, and low adaptive capacity to climate-related phenomenon creates an environment of high vulnerability in several areas in the country.



Source: The Malawi Hazards and Vulnerability Atlas is a joint project among NASA/USAID's SERVIR-Eastern and Southern Africa initative and the Regional Centre for Mapping of Resources for Development. The atlas can be found at http://52.3.210.28/vulnerabilitytool/ and more information can be found on similar efforts can be found at http://www.servirglobal.net.

Strategies for policymakers in 2017

So in 2017, as African economies look to implement sustainable development, what should they focus on? Here are five action areas:

- **Transform agriculture and land use.** Some 60 percent of employment is still in agriculture, a sector with low levels of productivity by international standards. Low crop yields and rapid population growth have pushed the expansion of cropland to address food security challenges, but this has simultaneously contributed to deforestation and increased vulnerability to climate change. Policymakers should look to intensify agriculture to boost yields and explore climate-smart farming techniques.

- **Diversify into manufacturing and other high productivity sectors.** As countries look to higher productivity sectors such as industry and high-value services to drive growth, they should look to exploit opportunities to "green" existing production processes where it is economically beneficial. New markets domestically, regionally, and internationally could also open up, and there may be opportunities for import substitution. Strengthening infrastructure, particularly around energy and transport will be crucial.

- **Manage urbanization.** By 2050, the population of sub-Saharan Africa's cities will increase by almost 800 million people. This is nearly half of the projected rise in numbers of the urban population globally. Many cities are experiencing the effects of poor urban development and urban sprawl. Weak city governments lack resources to fund the required urban infrastructure and public services. For example, Nairobi and Dakar have only $10–15 per year per inhabitant for capital expenditures, and most cities have much less—meaning some areas will get only inadequate basic services. A shift towards more compact, connected, and coordinated urban development will assist in creating a better model for urban growth.

- **Foster a modern energy transition.** Sub-Saharan Africa's per capita energy consumption is 15 percent of that in OECD countries, and the increasing demand for energy over coming decades will be vast. This will require both grid and off-grid solutions. While fossil fuels will be part of the story, the continent has an enormously rich portfolio of clean energy assets, which are increasingly cost competitive even without considering the wider social and environmental benefits. For example, sub-Saharan Africa has about 1,100 gigawatts (GW) of solar capacity, 350 GW of hydro, and 109 GW of wind. There is also an opportunity to exploit current technologies to promote energy efficiency to reduce the required expansion of supply.

Climate action and wider approaches to development can go hand in hand—not just for adapting to climate change but also promoting low-carbon growth.

FIGURE 5.6.

WAYS IN WHICH CLIMATE CHANGE IS ALREADY AFFECTING AFRICA

AFRICA CONTAINS 7 OUT OF 10

of the countries that are considered the most threatened by climate change globally: Sierra Leone, South Sudan, Nigeria, Chad, Ethiopia, the Central African Republic, and Eritrea.

Sources: Ede Ijjasz-Vasquez Christoph Pusch. "On the road to resilience: Reducing disaster and climate risk in Africa," 22 November 2016. World Bank Blog. Available at: http://blogs.worldbank.org/africacan/on-the-road-to-resilience-reducing-disaster-and-climate-risk-in-africa.
"Africa and the challenges of climate change," African Development Bank. Available at: http://www.afdb.org/en/cop22/focus-africa/implications-for-africa.

Africa Adaptation Gap Technical Report: Climate-change impacts, adaptation challenges and costs for Africa, United Nations Environment Programme (UNEP), 2013. Available at: http://www.unep.org/pdf/AfricaAdapatationGapreport.pdf.

Africa Climate Change Impacts Map, United Nations Framework Convention on Climate Change, Available at: http://unfccc.int/essential_background/the_science/climate_change_impacts_map/items/6224.php.

State of the World's Cities 2008/9: Harmonious Cities, UN-Habitat, United Nations Human Settlements Programme, 2008.

1 ACCESS TO WATER

Scientists predict that between **90 million to 220 million people** will be exposed to increased water stress due to climate change by the year 2020. This would be devastating for a region that is already prone to water-related issues.

2 FOOD SECURITY

Agricultural production in many African countries and regions is predicted to be negatively affected by climate change. Crop yields from agriculture that is rain fed could **decrease by up to 50 percent by 2020**, and 94 percent of the continent's agriculture is already rain-dependent. This would also have severly negative impacts on food security on the continent.

3 HUMAN HEALTH

Climate change is also predicted to change infectious disease occurrence, with Africa seeing **increases in rates of malaria** and the spread of malaria occurrence to areas where it previously was not endemic. Highland areas of Ethiopia, Kenya, Rwanda, and Burundi are expected to start experiencing malaria around 2050.

4 RISING SEA LEVELS

Projections for rising sea levels vary globally, but as Africa is within a predominantly tropical area, it's expected to have higher than average levels of sea rise. In West Africa, **56 percent of GDP is generated near the coast**. In addition, there are at least **three cities with populations over 8 million** located in coastal areas of Africa. Analysts predict that rising sea levels will have significant adverse impacts on concentrations of vulnerable populations living in urban coastal areas. There are many large coastal African cities that could be very negatively affected by rising sea levels. A report by UN-Habitat listed the following cities that could be affected: Abidjan, Accra, Alexandria, Algiers, Cape Town, Casablanca, Dakar, Dar es Salaam, Djibouti, Durban, Freetown, Lagos, Libreville, Lome, Luanda, Maputo, Mombasa, Port Louis, and Tunis. Of these, Lagos is considered a megacity (over 10 million people) and Dar es Salaam is on its way.

5 COST TO DEVELOPMENT

According to the African Development Bank, climate change is already negatively affecting the GDP of African countries by **approximately 1.4 percent**. The costs of adaptation are expected to reach **3 percent of annual GDP by 2030**.

6 EXTREME WEATHER EVENTS

The Intergovernmental Panel on Climate Change predicts that extreme weather events, like floods and droughts, are going to be experienced with more frequency and intensity in Africa due to climate change. According to the World Bank, Africa has experienced more than **2,000 natural disasters** since 1970, with almost half taking place in the last decade. From 1995 to 2015, there were many extreme weather events on the continent, specifically **136 episodes of drought—77 in East Africa alone**. In 2015, South Africa also experienced its worst drought in 100 years. Niger, Mozambique, the Democratic Republic of the Congo, Madagascar, Angola, and Malawi all experienced extreme flooding. In 2016, Southern Africa experienced severe drought that caused failed crops, decreased yields, and spikes in food prices.

- **Keep working on the "basics."** A number of areas are critical whatever the future development trajectory looks like. For example, while gender inequality has fallen in Africa, it stills remains higher than elsewhere in the world. Such an outcome directly raises women's inclusion and welfare, and also benefits economic productivity—for example by breaking down barriers to education.

The other looming challenge: Financing

How will this development be financed? So far, $100 billion dollars per year by 2020 have been pledged to developing countries to support action. Much will be channeled through vehicles such as the Green Climate Fund and the African Development Bank. Ensuring that developing countries, including those in Africa, actually receive this funding is an important part of ensuring the credibility of the climate

EVENT TO WATCH

MAY 22-26, 2017

2017 Global Platform for Disaster Risk Reduction

The 2017 Global Platform for Disaster Risk Reduction will serve as a forum for more than 5,000 senior government officials and leaders from the private sector, civil society, and science to discuss the development and implementation of international instruments on disaster risk reduction. In particular, the global platform will review international progress in the implementation of the Sendai Framework for Disaster Risk Reduction, which was adopted at the Third U.N. World Conference on Disaster Risk Reduction in Japan in 2015. It will also identify strategies for countries to address vulnerability to disasters, going beyond disaster management to touch on issues including poverty, unplanned urbanization, environmental degradation, and poor risk governance. The timing of this conference is significant, especially since in 2016 (and continuing in 2017) millions of people in parts of East and Southern Africa are food insecure due to the strong, lingering effects of El Niño.

Recognizing the importance of increasing the resilience of people who experience to natural disasters, at the 2016 AU Assembly meetings, member states agreed to support an architecture for risk reduction in Africa at the national, regional, and continental levels and requested that the AU Commission submit a roadmap to establish a Center of Excellence for Disaster Risk Research, Prevention, and Management.

change negotiation process. This should look to complement the larger pools of private finance to transform Africa's societies, which will need to be an order of magnitude larger.

In sum, climate change presents a risk to African countries' long-term economic transformation, which remains a priority. However, transformation itself would build resilience to climate impacts, and there is potential that it could be low carbon.