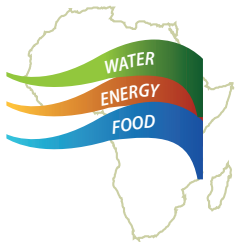


# Issue paper



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## **Moving against the tide: Africa rising to seize climate change opportunities for water, food and energy security**

### **I. Context**

The impacts of climate change are evident in many parts of Africa (Sepo H. and others, 2013; Waithaka, M. and others, 2013; Abdulai Jalloh and others, 2013). The Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC 5AR) further reiterates the severity of current and future impacts of climate change through rising sea levels, floods, droughts, hurricanes and increasing temperatures. Additionally, predictions indicate that differential seasonal variability on the continent will lead to a reduction in resources such as water and changes in land suitability for the production of certain crop varieties. Minimizing the temperature rise to below 2oC could mitigate these consequences.

Climate change is a new development imperative, which threatens economic growth and development in Africa. Livelihoods and economic activities in Africa are tied to natural resources and driven by simple production practices. Key economic sectors continue to be vulnerable to the adverse effects of climate change and extreme weather patterns. The agricultural sector, for instance, which supports nearly 70 per cent of the population, is characterized by rain-fed systems.

African leaders have taken up measures to reorient the continent's natural resources towards transformational change that addresses poverty and assures food, energy and water security, and

shared prosperity for its people. In the past few decades, this policy shift has led to economic renaissance and sustained economic growth.

Against this backdrop, questions that have emerged on climate change and development in Africa include:

- a. Can Africa transform its productive sectors and rise above the challenges of climate change?
- b. What opportunities can Africa seize in the context of the post-2015 United Nations Framework Convention on Climate Change (UNFCCC) agreement?
- c. Can African policymakers prioritize investment on research for development?
- d. What can African Governments do to leverage climate finance opportunities?
- e. How can the global agenda for the post-2015 UNFCCC climate change regime enhance Africa's transitional efforts to a green economy?

The objectives of the paper are to:

- Underscore the urgency of carrying out the investments and interventions needed to address the challenges of vulnerable African groups

- Highlight the climate change opportunities available for transforming agriculture, taking into account its linkages to other key economic sectors, such as energy and water resources
- Help create an understanding among policymakers that climate change does not only involve challenges, but also opportunities, which can help transform Africa; and that there is need to focus on those opportunities in order to foster long-term resilience to the effects of climate change
- Create an understanding, based on the key findings of IPCC AR5, that transformation and poverty reduction in Africa can be achieved through a nexus approach in addressing agriculture, water and energy together
- Contribute to strengthening Africa's position and ensuring that its interests are captured in the post-2015 climate change arrangement.

## II. Climate change opportunities in Africa

Africa is a continent endowed with unique sets of opportunities to overcome climate change challenges and turn the tide of risks into development opportunities. Rooted in extraordinary biological and sociocultural diversity, the people of the continent have repeatedly demonstrated the ability to survive and thrive in highly challenging and dynamic situations. Climate change is one of them, but the continuous rise of the continent is anchored on how the region mobilizes its potentials in seizing the emerging opportunities from climate change. Seizing those opportunities will entail harnessing the key resource pools discussed below.

### A. Mobilizing financial resources

Africa faces enormous climate change challenges and is compelled to step up its efforts to provide an effective response to those challenges especially for adaptation to climate change impacts. Both domestic and international sources of financing would be needed to tackle the issue of climate

change. The African Development Bank report of 2011 (AfDB, 2011) estimates that adaptation costs in Africa will range between \$20 billion and \$30 billion over the next 10 to 20 years. The changing risk profiles, as determined by recent assessments such as the IPCC Fifth Assessment Report, could significantly increase the amount of financial resources required for adaptation responses. This was reiterated by the 2013 United Nations Environment Programme Africa Adaptation Gap report that elucidated the gap in the current climate risk profile of Africa and the level of funding expected to address the risks (UNEP, 2013). Mitigation efforts also come with a cost, which must be closely watched by Africa in making mitigation pledges. While the continent cannot entirely eliminate carbon emissions, in its effort to grow its economies, considerable effort are required to ensure that carbon emissions are minimized substantially.

Africa's access to climate finance, despite the proliferation of mechanisms, remains elusive. There should thus, be full compliance with current climate finance pledges under the Framework Convention negotiations, and operationalize the Green Climate Fund to improve availability and access for climate-resilient and low-carbon development. African leaders should also explore domestic sources of funding climate change interventions.

In addition to resource mobilization, there should be more effective deployment of climate finance in African countries. Institutional frameworks and greater harmonization in climate finance administration are required to ensure alignment with country systems and better donor coordination.

### B. Mobilizing human capital

The wealth of Africa is also in its people. With the continent's rapidly increasing population, high urbanization rates and growing economy, the rising middle class and shift in lifestyle and consumption patterns will likely result in a surge in the demand for energy, food and water. While this may pose some challenges, it also offers major opportunities for transformational change towards

a green economy and climate-resilient pathways for Africa to rise sustainably.

Today, Africa is the continent with the highest number of inhabitants below the age of 20, offering a demographic dividend that provides great opportunity for innovative and transformational change and an energetic and youthful productive workforce. Indeed, supporting Africa's youths with the right skills, training and capacity will prepare them to seize the emerging opportunities offered by climate change and response measures.

### C. Technology and innovation

Technology and innovation, in sectors such as agriculture, water and energy securities, are important for Africa's transformational agenda. Agriculture, for instance, requires innovation and technologies across major commodity value chains, to maintain the economic growth momentum and shared prosperity that the continent aspires to. Similarly, achieving sustainable energy for all requires innovative approaches and the adoption of appropriate technologies to capitalize on the enormous endowment of renewable energy sources on the continent. Africa has demonstrated its readiness to embrace new technologies and innovations that serve the needs of people. For example, it is the fastest growing region in mobile telephone usage (BBC, 2011). Building these information networks into vital structures and quick outlets for disseminating and sharing information, and providing early warning on climate services and market opportunities will improve the response to the risks of climate change.

According to Dr. Ngozi Okonjo-Iweala, the Finance Minister of Nigeria, the current system of alert for natural disasters is neither timely nor equitable enough to enable the communities to upset the risks or respond appropriately (Iweala, N. and R. Wilcox, 2013). With adaptive technology transfer, the existing mobile networks and platforms in Africa could be built on, so as to provide early warning and improve access to vital climate services, in an effort to avoid disaster and reduce loss and damage.

### D. Water resources

Africa has about one-third of the world's major international water basins, spanning over 100,000 km<sup>2</sup> (UNESCO, 2013). However, only 62 per cent of its population has access to improved water supply, with only about 3.8 per cent of annual renewable water resources being used in sub-Saharan Africa. Eighty-five per cent of the total amount of water drawn is used in agriculture, 9 per cent for community water supply and 6 per cent for industry. The non-availability of water in certain areas and lack of access in others largely contribute to food insecurity. Economic water scarcity can be overcome by investments in infrastructure, which could shape temporal and spatial variability.

Even under climate change stress, the continent still has great water resource potential, albeit unevenly distributed across countries. There is a need, therefore, for innovative approaches to improving efficient use and sharing water resources among multiple users and for multiple purposes. This will require appropriate technologies, national and regional policies, and legal frameworks to improve water access.

### E. Land resources

Increasing agricultural production and productivity is crucial. Africa has nearly 60 percent of uncultivated arable land (FAO, 1997). The continent currently uses less than 10 percent of arable land for food production (World Bank 2014) under production systems that are predominantly rain fed. Agricultural production in Africa has been constrained and confined to seasonal rainfall patterns with only 6 per cent of arable land irrigated (FAO, 1997), resulting in perpetual low productivity and food insecurity. Yet, the continent has the potential to irrigate nearly 40 million ha (10 percent) and boost agricultural production by 50 percent (UNEP, 2010). Such measures can ensure sustainable increase in food productivity and production and in addressing climate change impacts on agricultural production.

## F. Building and strengthening institutional capacity

African institutions are currently faced with the new challenge of managing climate change and development concurrently. Reorienting institutional and policy frameworks to respond to emerging challenges of development and climate change is critical. This was why the “Climate for Development Initiative”, ClimDev-Africa, mandated by African Head of States, was set up to support member States in enhancing the capacity of climate services to provide timely information to end users, such as policymakers, planners and practitioners, in order to safeguard the current economic growth momentum on the continent. The African Union also enacted the African Risk Capacity Act to serve as a mutual insurance fund to support disaster response, relief and recovery, safeguard development efforts and reduce the risk burden on the weak and most vulnerable communities and nations (African Union, 2013). Such efforts should be consolidated as they are likely to lead to cost-saving opportunities for nations.

## G. Renewable energy resources

Africa continues to face energy challenges, although it is endowed with sufficient amounts of clean energy sources to meet its growing needs and enable its nations to pursue their development and industrial transformation. For example, the hydropower potential alone is estimated to be 1852TWh per year, three times more than the continent’s current demand of 554TWh per year. Yet, about 58 per cent of the population lack access to electricity, while about 65 per cent lack access to clean energy for cooking (IEA, 2013). There are other renewable energy sources such as solar, geothermal, wind and biomass, whose distribution across the continent provides unlimited opportunities, and which, through innovation and appropriate technologies, can significantly transform the continent’s energy landscape.

## III. Moving against the tide with the nexus approach in Africa

The nexus approach is a gateway to integrative responses, especially for systems with inseparable relationships that require interconnected solutions. The uncertainty and complexity of the impact of climate on dynamic systems, such as agriculture, water and energy, often generate cascading effects across system boundaries, whenever one of the interacting components is impacted (Leclère and others, 2013; IPCC, 2014). The use of a nexus lens is in line with the multi-faceted policy approach used by Governments, the private sector and development partners, to work together to tackle interrelated issues concurrently and unlock the investment in infrastructure, capacity building and transfer of technologies required to seize the opportunities arising from a changing climate. Regional cooperation, as demonstrated by the African Risk Capacity Act, will be key in the process (ARC, 2013).

The water-energy-food nexus approach focuses on system efficiency rather than the productivity of individual sectors. It amalgamates management and governance across sectors and scales. This approach also helps climate mitigation measures to be more “water smart” and climate adaptation measures to be less energy intensive; it also avoids the detrimental consequences of food production systems and other vital ecosystem services (Hoff, H., 2011). Owing to the knock-on effects that agriculture, food and energy have on one another, using a nexus approach is critical in reducing their trade-offs and capitalizing on the synergies cost-effectively. The potential enhancement of system efficiencies is thereby greatly expanded.

The nexus approach, thus, offers a critical opportunity for providing food, energy and water security under climate change. In harnessing such an opportunity, it is prudent to use a nexus approach that builds on the synergies and minimizes trade-offs between interacting systems.

## A. Harnessing the nexus potential for trade

Promoting regional integration to boost intra-regional trade in agricultural commodities, energy interconnections and transboundary water management will be better served by the nexus approach, in an effort to tackle climate change challenges. Changes in production systems and shifts in crop varieties as a result of climate change are likely to open up new market opportunities for some African countries, following shifts in the suitability in crop production areas. For instance, changing climate is predicted to favour increase in maize production in Tanzania, more than in its neighbouring countries, thereby opening trade opportunities to those countries, to help them cushion supply shocks in the region (Ahmed S.A. and others, 2012). Capitalizing on such emerging opportunities requires a nexus framework that balances efficient resource utilization and guides policies and legislations to boost competitiveness. Designing and implementing holistic and interrelated trade, food security and climate change policies is crucial to overcoming the impact of climate change on food production and exploiting the related emerging opportunities.

## IV. Way forward

Multifaceted climate change impacts on various development sectors will narrow the options for adaptation and development in Africa. Africa must harness the opportunities to build resilience and embark on reforms to cope with the climate-related challenges to economic development. The transformative development agenda of the continent requires sufficient and reliable energy supply. It is therefore crucial to shift to a renewable energy mix and also ensure efficient use of water to improve agricultural productivity. Expanding alternative sources of energy such as biogas, solar and micro- or mini-hydro power plants is critical to improving the affordability of clean and decentralized energy supply to rural communities, which lack access to energy.

Using a solution space of the water-energy-food nexus is critical to addressing interrelated issues such as economic growth, human development,

urbanization and climate change in Africa. As the continent's demand for food, energy and water increases, the nexus approach will serve as a binding factor among African nations for effective and efficient resource management and use, trade and investment, and regional integration.

Since Africa is not locked in any technology preferences, it can follow a green, blue and renewable energy pathway to leapfrog from old carbon intensive models to low-carbon pathways. Consequently, it can unlock its huge natural resource and human potential by taking the opportunities offered by climate change, using knowledge, modern technologies and innovations for transformational change, while paying attention to the following:

- Ensuring that the challenges posed by climate change to the key productive sectors are made visible
- Overhauling the current “problematic” perception of climate change by moving from a narrative of heightened vulnerability to one of immense opportunities in the energy, water and agricultural sectors
- Creating a space where opportunities in climate change for energy, water and agriculture are discussed, and practical solutions identified
- Developing clear African positions on key elements of the global negotiation on matters related to adaptation, finance, capacity and technology transfer
- Creating an understanding that food security, energy for all and poverty reduction objectives cannot be achieved without recognizing the link between agriculture, water and energy
- Sharing good practices to guard the continent against the constraints of climate change, thereby eliminating poverty and ensuring food security and energy for all

Knowledge-based policies and climate-resilient strategies are thus, essential to harnessing development opportunities and safeguarding Africa's economic growth.

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