



Renewable Energy and Climate Change: Exploring the Policy Options for Africa

Lack of access to energy services is one of the main constraints to economic development in Africa. Only about 31% of the population of Sub-Saharan Africa has access to electricity, and only 14% has access in rural areas. Compounding the challenge, traditional biomass supplies up to 85% of primary energy supply and accounts for 80% of energy consumption. With low energy efficiency, limited installed generation capacity, and weak governance institutions in the energy sector, energy security in Africa has become a critical concern.

Adaptation to climate change is another challenge to sustainable development in Africa. Even though Africa contributes less than 4% of global greenhouse gas emissions, it is disproportionately affected by the impact of climate change on, inter alia, food security, water supplies, biodiversity and climate-related diseases. Energy and climate change are however related, as most greenhouse gas emissions arise from the way society produces, distributes, and consumes energy. This connection offers an opportunity to implement policies that will allow achievement of energy security goals in a sustainable manner and in less carbon-intensive ways.

Key messages

- Use of renewable energy technologies can help mitigate greenhouse gases and enhance access to clean energy.
- Barriers to the introduction of renewable energy must be overcome to benefit from their promise.
- Consistent and achievable targets must be set for renewable energy development.
- Policies that encourage low carbon renewable energy often provide additional benefits.

Challenges to introducing renewable energy

There is increasing evidence that expansion of power generation capacity can be met through renewable energy technologies that deliver clean and sustainable energy supplies while simultane-

ously contributing to the mitigation of climate change. Climate change policies tend to emphasise either mitigation of greenhouse gases or strategies and practices for adapting to a changing climate. While adaptation strategies help countries deal with socio-economic, environmental, biodiversity, health, food security, water supply, and other climate change-related vulnerabilities, mitigation strategies focus on reducing greenhouse gas emissions. There are many ways to accomplish this, but one of the most important is through the development of renewable energy.

The application of renewable energy technologies in households, such as improved biomass stoves, has led to significant environmental benefits by mitigating deforestation and reducing the demand for fossil fuels. The application and promotion of renewable energy, such as small-scale hydropower, biogas, and solar technologies in rural areas, is also promising. For diverse energy uses, the displacement of fossil fuels with cleaner energy sources will help mitigate net contributions to global

greenhouse gases. However, there are barriers to integrating renewable energy and climate change policies that are stifling both the development of renewable energy and the development of effective climate change policies. Among these are difficulties related to coordination, especially when involving international and regional initiatives. Moreover, setting environmental standards and targets can involve administration, monitoring, and private sector compliance costs, among others.

Consistent and/or favourable renewable energy policies are often lacking in Africa. In addition, the institutional capacity that could facilitate technical, economic, and marketing developments is either lacking or weak. A shortage of technical skills and financial barriers are also constraints, and African governments do not typically encourage the private sector, banks, and other lending institutions to invest in renewable energy.

Recommendations

Numerous challenges remain to effectively tackle Africa's energy problems. Climate change-related impacts will continue to pose serious risks to social development. However, Africa's policymakers have a wide array of policy options and instruments available to develop effective, coherent, and integrated energy and climate change policies. Renewable energy technologies, such as bio energy, waste/biogas, wind energy, solar energy, wave and tidal energy, geothermal energy, and hydropower are increasingly competitive alternatives, but they will need to be considered in relation to other societal goals. The following recommendations are proposed to give African policymakers ideas for integrating climate change and energy policies and so facilitate expanded access to sustainable energy sources across Africa.

- ***Establish clear, consistent and achievable targets for energy development and environmental stewardship.*** The existence of clear and consistent energy policies that set targets for renewables in the future is an essential first step. Without targets, renewable energy development is likely to be patchy. Although setting and achieving renewable energy tar-

gets alone will have environmental benefits, setting targets for environmental protection in addition will provide further opportunities for policy synergies.

- ***Design and implement a range of policies to promote renewable energy development and reduce greenhouse gas emissions.*** Using a range of policies, as circumstances allow, will enhance the development of clean energy. Showing how these policies can lead to reduced greenhouse emissions will be important and especially useful in the global context if carbon becomes properly priced. The implementation of fiscal policies to promote renewable energy development in some African countries is encouraging.
- ***Engage in regional and continental initiatives to establish a vision for effective climate change policy for Africa.*** In the current global climate change negotiations, no clear greenhouse gas mitigation targets have been agreed by African countries. While Africa contributes a small fraction of global emissions, it is still vulnerable to climate change. Establishing regional and continental goals can help shape the development paths of countries and lead to sustainability. Encouraging the energy sector to shift to cleaner generation sources can help African countries capitalise on future opportunities that come about as a result of global climate policies.
- ***Encourage the adoption of small-scale renewable energy and leverage scaling-up opportunities offered by energy technologies.*** Energy technologies that rely on wind, solar, and biomass are increasingly attractive alternatives. The large-scale potential of these energy sources will need to be considered, and if feasible to scale up, they should be encouraged through supportive policies.
- ***Encourage the establishment of global carbon trading to attract resources for mitigation efforts in Africa.*** A significant opportunity exists for Africa to profit from the low level of its carbon emissions and high potential for

developing clean energy. A global emissions regime will award carbon credits to African countries. Although the details of how carbon markets will work are complex, their ability to price greenhouse gas emissions and to communicate price signals will help to integrate climate and energy policy and provide opportunities to the energy sector to mitigate emissions.

- **Utilise existing international policy frameworks and funding sources to promote renewable energy development.** Existing funding sources, such as the Clean Development Mechanism (CDM), are designed to stimulate sustainable development in developing countries. Africa can request climate adaptation funds to be deployed to renewable energy development. A strategic approach that links renewable energy development with measurable greenhouse gas reductions could help efforts to access CDM funds.
- **Recognise the potential impacts of climate change on energy security and diversify energy portfolios.** Even in countries with a large share of current energy supplies from renewable sources such as hydropower, climate change introduces energy supply risks for the future. A diversified energy strategy can lead to improved energy security, in particular as countries are faced with the prospect of having to adapt to future climate change. Reduced dependence on imported fossil fuels — oil in particular — through implementing a more diversified energy strategy will be important for energy security.

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