

Climate change impacts on Africa's economic growth

A. Introduction

1. The present report focuses on two scenarios of future climate change: a low-warming scenario, that is, with reference to the Paris Agreement (well below 2°C)¹ and a high-warming scenario (2°C by 2050, exceeding 4°C by 2100). The report highlights the risks to which African countries are exposed, the benefits of mitigation on economic growth and development, and it assesses the economic growth, and the development risks and opportunities for African countries.
2. A significant finding is that African countries will be severely hit by climate change and weather extremes. Stringent mitigation action would mean that, from as early as 2030, African regions would start experiencing reduced macroeconomic losses.
3. The report is aimed at providing African decision-makers with more accurate macroeconomic indicators and future economic growth trends that take into consideration climate change in adjusting short-term forecasts and long-term projections relating to gross domestic product (GDP).
4. The findings will be useful in informing African countries' national and international processes concerned with the implementation of the Paris Agreement on climate change and the achievement of the 2030 Agenda on Sustainable Development.

B. Main findings

1. There are five main findings, as follows:
 - (a) **The direct and indirect costs of taking action on climate change will be high, but the costs of inaction will be much higher.** For example, with climate change, West Africa and Eastern Africa could lose up to 15 per cent of their GDP by 2050. Global efforts towards a low-emissions, low-warming scenario – as expressed in the long-term goals of the Paris Agreement – could avert a large part of the most serious macroeconomic and development consequences for Africa.
 - (b) **There are substantial development risks in Africa under any level of warming.** Uncertainty over the magnitude of warming can therefore not be used as a rationale to postpone action.
 - (c) **Climate change will continue to pose additional constraints and threats to development in Africa in the course of the twenty-first century.** Failure to integrate the impacts of climate change into development planning will result in large economic, social and human development risks.

¹ The Paris Agreement under the United Nations Framework Convention on Climate Change was adopted on 12 December 2015 at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change. Its stated aim was to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and limit it to 1.5 °C.

(d) Actions on climate change in mitigation *and* adaptation will be rewarded by significant benefits and co-benefits. Such benefits include macroeconomic stability, job creation and decreased negative impacts of climate change on development.

(e) Mitigating emissions in Africa's energy sector has an impact on potential jobs. The results would be 0.7 million net potential jobs in 2030, which would thereafter sharply increase to as many as 11.8 million jobs by 2050.

C. Key results

2. Without action, climate change would impede development across Africa

5. The limited resilience of African countries against the negative impacts of today's climate are already resulting in lower growth and development, highlighting the consequences of an adaptation deficit. Indicative findings show lower GDP growth per capita ranging, on average, from 10 to 13 per cent (with a 50 per cent confidence interval), with the poorest countries in Africa displaying the highest adaptation deficit. Climate change will exacerbate the high vulnerability, and limited adaptive capacity, of the majority of African countries, particularly the poorest, potentially rolling back development efforts in the most-affected countries (see table).

(a) Climate change and climate variability could lead to severe macroeconomic consequences as early as 2030.

- (i) In all African regions, negative climate change impacts would progressively compound and lead to decreasing GDP per capita. The warming scenarios lead to losses by 2030 (compared to a baseline GDP per capita scenario) that range from -0.6 per cent in North Africa in the low-warming scenario, to -3.6 per cent in Eastern Africa in the high – warming scenario.
- (ii) As early as 2030, African regions would start benefiting from stringent mitigation action. Even though, by 2030, the absolute difference in losses between the low- and high-warming scenarios is still minor, the high-warming scenarios lead to an increase of damages ranging from about 16 per cent in Northern Africa to about 54 per cent in Central Africa, compared to losses in the low-warming scenario.

(b) African countries are projected to experience detrimental macroeconomic consequences from climate change by mid-century, in both warming scenarios.

- (i) Under a high-warming scenario, West Africa and Eastern Africa would experience a reduction in GDP per capita by about 15 per cent by 2050 (below a baseline GDP scenario).
- (ii) North Africa and Southern Africa would experience a decrease in GDP per capita approaching 10 per cent by 2050, while Central Africa could be less affected, with a possible decrease of five per cent in the high – warming scenario.

- (iii) After the 2030s, the loss gap between the low- and high-warming scenarios widens substantially. By 2050, losses in the high-warming scenario range from 50 per cent higher for Central Africa, to around 85 per cent higher for West African regions.
- (iv) A limited number of African countries, among which Liberia, Sudan and the United Republic of Tanzania display the highest economic risk to future climate change, in both warming scenarios. This high economic risk is the consequence of both high historical vulnerability and rapidly changing temperature and precipitation patterns.

Table

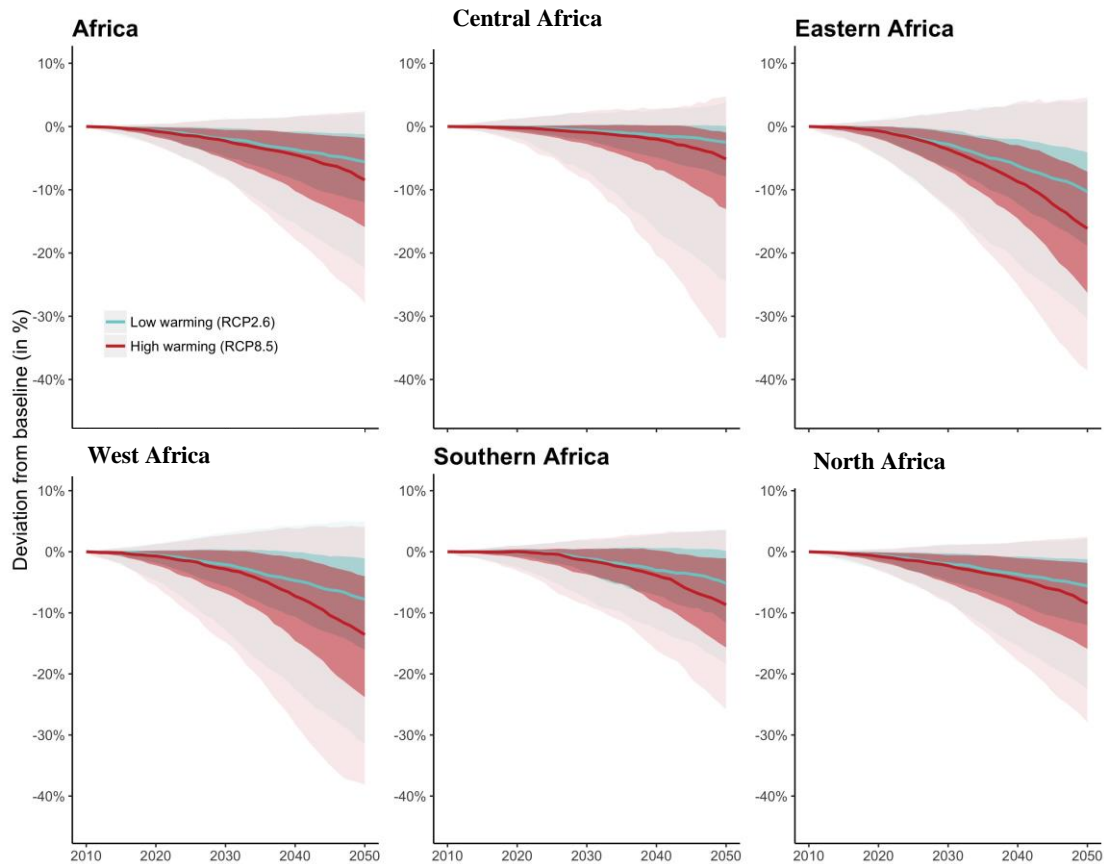
Five most-affected countries in 2030 and 2050 and associated median change in GDP per capita (in per cent change compared to a baseline scenario) in the low- and high-warming scenarios

Scenarios							
2030				2050			
Low warming		High warming		Low warming		High warming	
Country	Change in GDP per capita (%)	Country	Change in GDP per capita (%)	Country	Change in GDP per capita (%)	Country	Change in GDP per capita (%)
Morocco	-4.5	United Rep. of Tanzania	-6.0	Sudan	-12.7	United Rep. of Tanzania	-18.6
Sudan	-4.4	Sudan	-4.9	United Rep. of Tanzania	-11.4	Sudan	-18.6
United Rep. of Tanzania	-4.1	Liberia	-4.8	Liberia	-11.0	Liberia	-16.9
Liberia	-3.5	Morocco	-4.5	Guinea-Bissau	-10.7	Guinea-Bissau	-16.7
Mauritania	-3.0	Kenya	-4.4	Morocco	-10.3	Mauritania	-16.4

(c) The occurrence of climate extremes would lead to increased government expenditure. In addition, it would lead to a reduction in the volume of collected taxes, ultimately resulting in a possible increase in government debt.

(d) The increasing negative impacts of climate change on both the GDP per capita and the development capacity of African countries could be significant. Such impacts could reduce Africa's ability to cope with – and adapt to – the current and future impacts of climate change (see figure). Countries could be increasingly taken in a downward spiral of risks and vulnerabilities.

Figure
GDP per capita changes resulting from continued global warming



6. The set of figures indicate the GDP per capita changes resulting from continued global warming as follows: (top-left panel) for all African countries; for countries in the five regions a projection is shown, from 2010 over the next three decades, in a low-warming scenario (in blue) and a high-warming scenario (in red). The shaded ribbon represents the 50 per cent statistical confidence interval, while the light-shaded ribbon represents the 95 per cent interval.

3. Adapting to - and coping with - climate change will cost less under lower levels of warming, however, Governments in Africa will face residual damages with considerably higher costs, and those costs will rise substantially with more warming.

(a) Owing to the current adaptation deficit of African countries, adapting to climate change will necessitate closing the existing adaptation deficit, including improved territorial and city planning, and agricultural practices or updated building codes. Leaving the current adaptation deficit unchecked will lead to significantly higher losses and vulnerabilities.

(b) Given the limits to adaptation, for all African regions, the costs of residual damages are projected to be around five times higher than adaptation investments and costs combined. This reinforces the need for robust and binding global mitigation efforts, and an adequate provision for a loss and damage mechanism to deal with residual damages.

(c) The total costs of both climate change adaptation and residual damages are at least one third higher in the high-warming scenario, and, in Eastern Africa, such costs are projected to double by mid-century.

4. The range of benefits in taking action go well beyond intended, climate-related targets

(a) Adaptation protects communities and creates jobs. Adapting to climate change – even if warming is kept within the limits indicated in the Paris Agreement – will still incur high costs, although they would be largely outweighed by the benefits. For example, in the high-warming scenario, by 2050, adaptation benefits are about five times the costs in the health sector. The implementation of adaptation measures would also lead to skilled and unskilled job-creation in a wide range of economic sectors, including construction, health and services.

(b) Mitigation limits climate change impacts and damages. By 2030, the low-warming pathway would cost Sub-Saharan African countries from one-tenth (in North Africa) to one-third (in Central Africa) less than macroeconomic losses projected to be incurred in the high-warming scenario. This difference almost doubles by 2050, from being one-third higher in Northern Africa (compared to one-tenth in 2030) to almost 85 per cent higher in West Africa.

(c) Mitigation leverages development. Mitigation actions are also associated with at least three direct co-benefits: increased energy security, employment generation, and reduction in health risks related to direct exposure to pollution from fossil-fuel combustion.

D. Recommendations

1. To mitigate the negative impacts of development and economic growth, Governments in Africa should integrate climate change risks in development and macroeconomic planning. Practically, this could be pursued through the following actions:

(a) An improved understanding and knowledge of current aggregate and sectoral economic vulnerability are urgently needed to address countries' adaptation deficit in the most meaningful manner.

(b) Macroeconomic forecasts for Africa should include climate-induced economic risks. This integration would require capacity-building and analytical tools for government experts to analyse climate and socioeconomic data, and collaborate across ministries and agencies (such as development planning, statistics and meteorology).

(c) Multisectoral processes within Governments should lead to the design and implementation of resilience-building measures at the sectoral level. Development investment projects in governmental mid-term development plans should integrate resilience-building measures for all prioritized development sectors.

2. In planning and implementing development policies, it is important to consider the benefits and co-benefits for both mitigation and adaptation actions. Climate-informed and climate-resilient development planning is essential to mitigate the future negative impacts of climate change.

3. While investment in adaptation would benefit communities, some Governments in Africa will simply not be able to afford it. They should be given adequate support should be given to such Governments to enable them to access international finance through bilateral and multilateral sources, for example, the Green Climate Fund. In parallel, opportunities should be explored from additional private-sector sources and innovative financing mechanisms.
4. Governments in Africa, and technical and financial partners need to actively promote renewable energy and energy efficiency through investment incentives towards the development of low-carbon economies.