

**FACT SHEET**  
**CLIMATE CHANGE IN AFRICA - WHAT IS AT STAKE?**  
**Excerpts from IPCC reports, the Convention, & BAP**  
**Compiled by AMCEN Secretariat**

**Africa's survival is at risk**

No continent will be struck as severely by the impacts of climate change as Africa. Given its geographical position, the continent will be particularly vulnerable due to the considerably limited adaptive capacity, exacerbated by widespread poverty and the existing low levels of development.<sup>1</sup>

In Africa and other developing regions of the world, climate change is a threat to economic growth (due to changes in natural systems and resources), long-term prosperity, as well as the survival of already vulnerable populations. Consequences of this include persistence of economic, social and environmental vulnerabilities particularly for the economic and livelihood sectors. Climate change, variability and associated increased disaster risks are an additional burden to sustainable development in Africa, as well as a threat and impediment to achieving the Millennium Development Goals. Constraints in technological options, limited infrastructure, skills, information and links to markets further heighten vulnerability to climate stresses.

Africa's human existence and development is under threat from the adverse impacts of climate change – its population, ecosystems and unique biodiversity will all be the major victims of global climate change.

**Summary of the Projected impacts of climate change in Africa**

- ❖ By 2020, between 75 and 250 million people in Africa are projected to be exposed to increased water stress due to climate change.
- ❖ By 2020, in some countries, yields from rain-fed agriculture could be reduced by up to 50%. Agricultural production, including access to food, in many African countries is projected to be severely compromised. This would further adversely affect food security and exacerbate malnutrition.
- ❖ Towards the end of the 21st century, projected sea level rise will affect low-lying coastal areas with large populations.
- ❖ By 2080, an increase of 5 to 8% of arid and semi-arid land in Africa is projected under a range of climate scenarios (TS).
- ❖ The cost of adaptation could amount to at least 5 to 10% of Gross Domestic Product (GDP).

*Source: Report. Summary for Policy Makers, IPCC, 2007.*

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<sup>1</sup> Warming generally increases the spatial variability of precipitation, contributing to a reduction of rainfall in the subtropics and an increase at higher latitudes and in parts of the tropics (...) While warming is expected everywhere on Earth, the amount of projected warming generally increases from the tropics to the poles in the Northern Hemisphere.

Climate models suggest a global warming of about 3° C and a sea level rise of about 68 cm by the year 2100 due to the CO<sub>2</sub> emission projected under the Business-As-Usual (BAU) scenario. Globally, the rates of surface warming increased in the mid-1970s and the global land surface has been warming at about double the rate of ocean surface warming since then. Global mean surface temperatures continue to rise and with eleven of the last 12 years ranked among the 12 warmest years on record since 1850.

See, IPCC report, 2007, Chapter 11 – Regional Climate Projections

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**Why Africa is at risk**

- ✚ **Temperatures:** By 2050, average temperatures in Africa are predicted to increase by 1.5 to 3°C, and will continue further upwards beyond this time. Warming is *very likely* to be larger than the global annual mean warming throughout the continent and in all seasons, with drier subtropical regions warming more than the moister tropics.
- ✚ **Ecosystems:** It is estimated that, by the 2080s, the proportion of arid and semi-arid lands in Africa is likely to increase by 5-8%. Ecosystems are critical in Africa, contributing significantly to biodiversity and human well-being. Between 25 and 40% of mammal species in national parks in sub-Saharan Africa will become endangered. There is evidence that climate is modifying natural mountain ecosystems via complex interactions and feedbacks.
- ✚ **Rainfall:** There will also be major changes in rainfall in terms of annual and seasonal trends, and extreme events of flood and drought.

Annual rainfall is *likely* to decrease in much of Mediterranean Africa and the northern Sahara, with a greater likelihood of decreasing rainfall as the Mediterranean coast is approached. Rainfall in southern Africa is *likely* to decrease in much of the winter rainfall region and western margins. There is *likely* to be an increase in annual mean rainfall in East Africa. It is unclear how rainfall in the Sahel, the Guinean Coast and the southern Sahara will evolve. In the tropical rain-forest zone, declines in mean annual precipitation of around 4% in West Africa, 3% in North Congo and 2% in South Congo for the period 1960 to 1998 have been noted.
- ✚ **Droughts:** By 2080, an increase of 5 to 8% of arid and semi-arid land in Africa is projected under a range of climate scenarios (TS). Droughts have become more common, especially in the tropics and subtropics, since the 1970s.
- ✚ **Human health,** already compromised by a range of factors, could be further negatively impacted by climate change and climate variability, e.g., malaria in southern Africa and the East African highlands.
- ✚ **Water:** By 2020, a population of between 75 and 250 million and 350-600 million by 2050, are projected to be exposed to increased water stress due to climate change. Climate change and variability are likely to impose additional pressures on water availability, water accessibility and water demand in Africa.
- ✚ **Agriculture:** By 2020, in some countries, yields from rain-fed agriculture could be reduced by up to 50%. Agricultural production, including access to food, in many African countries is projected to be severely compromised. Projected reductions in yield in some countries could be as much as 50% by 2020, and crop net revenues could fall by as much as 90% by 2100, with small-scale farmers being the most affected. This would adversely affect food security in the continent and exacerbate malnutrition.
- ✚ **Sea-level rise:** Africa has close to 320 coastal cities (with more than 10,000 people), and an estimated population of 56 million people (2005 estimate) living in low elevation (<10-m) coastal zones. Towards the end of the 21st century, projected sea level rise will affect low-lying coastal areas with large populations. Sea-level rise will probably increase the high socio-economic and physical vulnerability of coastal cities. The projection that sea-level rise could increase flooding, particularly on the coasts of Eastern Africa, will have implications for health.
- ✚ **Energy:** Access to energy is severely constrained in sub-Saharan Africa, with an estimated 51% of urban populations and only about 8% of rural populations having access to electricity. Extreme poverty and the lack of access to other fuels mean that 80% of the overall African population relies primarily on biomass to meet its residential needs, with this fuel source supplying more than 80% of the energy consumed in sub-Saharan Africa. Further challenges from urbanisation, rising energy demands and volatile oil prices further compound energy issues in Africa.

*(Source: IPCC, 2007 Summary for Policy Makers); Chapter 11 of the 4<sup>th</sup> IPCC Report on Regional Climate Projections; & Chapter 9 on Africa)*

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**Impacts of Global greenhouse gas (GHG) emissions<sup>2</sup>**

At the present time, total annual emissions of greenhouse gases (GHGs) are rising. Over the last three decades, GHG emissions have increased by an average of 1.6% per year with carbon dioxide (CO<sub>2</sub>) emissions from the use of fossil fuels growing at a rate of 1.9% per year.

The stabilization of green house gas concentrations in the atmosphere by the end of the century is needed to maintain an increase in temperature at 2 degrees at most – corresponding to 450ppm of CO<sub>2</sub> equivalent.

- The largest growth in global GHG emissions between 1970 and 2004 has come from the energy supply sector (an increase of 145%).
- The growth in direct emissions in this period from transport was 120%, industry 65% and land use, land use change, and forestry 40%.
- Between 1970 and 1990 direct emissions from agriculture grew by 27% and from buildings by 26%, and the latter remained at approximately at 1990 levels thereafter.

Despite continuous improvements in energy intensities, global energy use and supply are projected to continue to grow, especially as developing countries pursue industrialization.

The projected emissions of energy-related CO<sub>2</sub> in 2030 are 40–110 % higher than in 2000 (with two thirds to three quarters of this increase originating in non-Annex I countries), although per capita emissions in developed countries will remain substantially higher.

For 2030, GHG emission projections (Kyoto gases) consistently show a 25–90% increase compared to 2000, with more recent projections being higher than earlier ones.

- ✚ In Sub-Saharan Africa, the annual per capita emissions of CO<sub>2</sub> (2004) are estimated at one ton.
  - ✚ Projections estimate that climate change will lead to an equivalent of slightly less than 2% to 4% annual loss in GDP in Africa by 2040 (including market and non-market sectors, without adaptation).
  - ✚ By 2100, it is estimated that climate change will lead to an equivalent annual loss in GDP in Africa of 10% (including market and non-market sectors, without adaptation), with an upper value equivalent to an annual 25% GDP loss by 2100.
  - ✚ Adaptation could (but not entirely) reduce the economic costs of climate change in Africa significantly, from 2% to 1% of GDP by 2040 (that is, from \$ 230 billion to \$ 148 billion), and from 10% to 7% of GDP by 2100 (\$ 530 billion to \$ 349 billion with a business as usual (BAU) scenario).\*
  - ✚ Without mitigation, however, a magnitude of climate change is likely to be reached that makes adaptation impossible for some natural systems, while for most human systems it would involve very high social and economic costs. \*
- \* (4<sup>th</sup> IPCC Report, 2007). Chapter 4, Section 4.6.1 and Chapter 17, Section 17.4.2

To limit the temperature increase to 2°C above pre-industrial levels, developed countries would need to reduce emissions in 2020 by 25–40% below 1990 levels and in 2050 by approximately 80–95%. With less than 3% of the world's total emissions of green house gases, the African continent makes no significant contribution to global warming.

<sup>2</sup> The points under this section are excerpts from IPCC report 2007 Mitigation of Climate Change. 4<sup>th</sup> assessment report

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**Some Principles and Concepts**

***a) Common but differentiated responsibilities and respective capabilities***

The principles of the Convention include - “*Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and common but differentiated responsibilities and respective capabilities*”, which leads to the requirement that developed countries take the lead (Art 3.1) as follows:

- Annex I countries’ per capita emissions converge to low levels within a fixed period.
- Non-Annex I countries converge to the same level in the same timeframe, but starting when their per capita emissions reach an agreed percentage of the global average. Other countries voluntarily take on “no lose” targets.

**Responsibility:** Responsibility has been defined in the Brazilian proposal directly in relation to the contribution to temperature increase, based on historical cumulative emissions; or per capita approaches.

**Capability:** A country may have high responsibility for contributing GHG emissions, but nonetheless be too poor to mitigate. Two indicators of capability are therefore considered: the human development index (HDI) and GDP per capita. Countries with higher levels of national income and a higher rank on the HDI might be expected to carry a higher burden of mitigation. A high value for CO<sub>2</sub>/GDP would suggest high potential to mitigate.

High per capita emissions suggest unsustainable consumption patterns, which should provide potential to mitigate without endangering a basic level of development, e.g. by lifestyle changes. The growth rate of absolute emissions gives an idea of whether the rate of increase is still high or has already been curbed.

***b) Principles of ‘convergence’ and ‘equitable entitlements’***

The industrialized countries (ICs) need to accept an urgent change in their domestic energy trajectory and undertake more stringent GHG emission reduction targets. In addition, ICs must freely allow for the transfer of advanced energy efficient technologies to non-annex I countries; and strengthen an appropriate financial mechanism to help meet the additional cost of emission stabilization/reduction for meaningful participation of developing countries.

***c) Comparability of effort***

The Bali Action Plan, calls for “ensuring the comparability of efforts” among developed Parties. The ability to compare pledges is seen as a vital element of ensuring a fair, equitable, and transparent global agreement.

***d) Firewall between mitigation commitments by developed and developing countries***

The differentiation between the mitigation commitments by Annex I country Parties and the mitigations actions by developing countries that have no commitments but only obligations must be maintained:

- ✚ Mitigation commitments by developed countries - Quantified GHG emission reduction commitments (QERCs) are legally binding; and GHG emissions reduction *commitments* are measurable, reportable and verifiable (MRVs). Numbers/Figures are therefore important because they have direct implications on developing countries in terms of adaptation.
- ✚ Mitigation actions for developing countries - *Voluntary* (in accordance with article 12.4 of the Convention) and *Nationally appropriate* and must be *fully supported* (in accordance with Article 4.7 of the Convention) and enabled by Finance, Technology Development and Transfer, and Capacity Building from Developed Countries.