



**Climate Change and Africa's Poor  
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People-driven sustainable development in Africa**

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## **Introduction: The human development backdrop**

In spite of the fact that some progress has been made in both economic and social fronts in the last decade, sub-Saharan Africa remains the poorest region in the world. All the 22 countries in the low human development category in the 2007/2008 Human Development Report are in the region. It has the world's lowest average life expectancy at birth, one of the lowest adult literacy and enrolment rates. More than a quarter of children of primary school age in the region are not in school. One in six children do not live to celebrate their 5<sup>th</sup> birthday. About 32 per cent of the population is malnourished, while 63 per cent does not have access to adequate sanitation and 45 per cent without access to improved water supply.

Sub-Saharan Africa is the only region where absolute poverty is increasing. Four out of ten people in the region live in absolute poverty. In fact it is projected that the region will account for almost one-third of world poverty in 2015, up from one-fifth in 1990.

The region is the most affected by the AIDS epidemic, accounting for 68 per cent of adults and nearly 90 per cent of children infected with HIV. More than 76 per cent of global deaths due to AIDS-related illnesses in 2007 occurred in sub-Saharan Africa.

Malaria is endemic in the region. Presently, the region accounts for 90 per cent of deaths from the disease and some 800,000 children under the age of 5 die each year as a result of malaria.

The region is off –track when it comes to achieving the millennium development goals by 2015. In fact only three countries (Cape Verde, Comoros and Eritrea) are on track to achieve the MDG on child mortality. Climate change will be superimposed on these existing human development deficits and further push poor and vulnerable people into low human development traps if the global community fails to act now.

Sub-Saharan Africa along with other poor countries, will suffer the earliest and most damaging human development setbacks, thwarting efforts towards achieving the MDGs on hunger and poverty reduction, child and maternal mortality; among others. Across the region, people are already being forced to cope with the impacts of climate change—coping strategies that are often detrimental to achievement of long term human development.

According to scientific evidence, warming in sub-Saharan Africa is likely to be above global average—this means that water availability for livelihood will be reduced as a result of frequent droughts and changes in rainfall pattern. Increased exposure to drought, more intense storms, floods and environmental stress will continue to hold back efforts to build a better life for poor people in the region and their children.

## **Climate change implications for sub-Saharan Africa**

The distribution of current emissions points to an inverse relationship between climate change vulnerability and responsibility. While sub-Saharan Africa is at the forefront of negative effects of climate change, it has contributed little to carbon dioxide (CO<sub>2</sub>) emissions and other greenhouse gases (GHG) linked to rising temperatures. For example, the region accounts for around 11 per cent of the world population but represents 2 per cent of global CO<sub>2</sub> emissions. The state of Texas with a population of 23 million people registers CO<sub>2</sub> emissions of 700 MtCO<sub>2</sub> in 2004, more than total emissions left by sub-Saharan Africa with a population of 720 million people. Yet the region is highly exposed to climate change threats for various reasons.

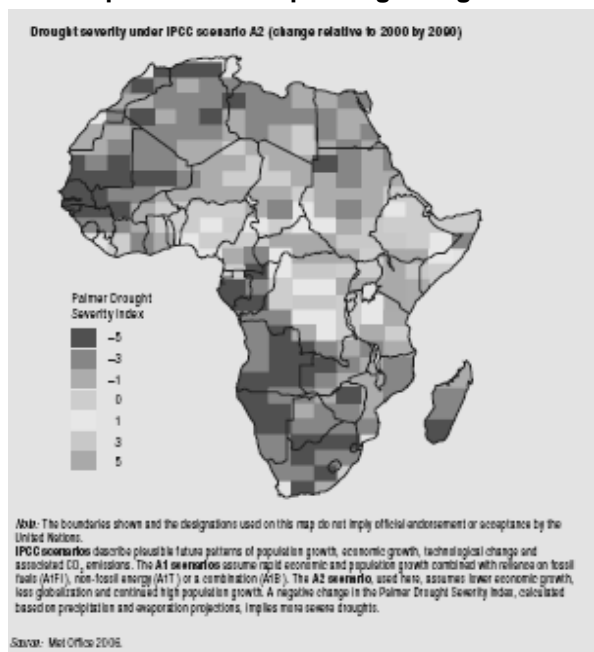
Firstly, sub-Saharan Africa's economy depends on natural resources that are sensitive to changes in climate—economic growth is closely tied to rainfall. One of the ways in which climate shocks could create cycles of disadvantage in the region is through the impact on agricultural production. Agriculture is the backbone of local livelihoods and GDP in a number of African countries. On average, the sector accounts of 21 per cent of GDP (ranging from 10 to 70 per cent)<sup>1</sup>

For the periods 2000-2004, 10 million people in sub-Saharan Africa were affected by droughts and two million by floods. When a drought or flood destroys a harvest, the resulting loss of income and assets can leave households unable to afford the seed, fertilizer and other inputs needed to restore production the following year. Cycles of drought create poverty traps for many households, thwarting efforts to build up assets and increase income. For example, during the 1999 drought in Malawi, poor people resorted to eating less—to make meals last—and vegetables rather than meat. They also depleted their savings or borrowed money, sold their livestock and poultry or household items. In 2002, drought left nearly 5 million people in Malawi in need of emergency food aid.

Revenue losses from agriculture in dry-land sub-Saharan Africa are projected to amount to 25 per cent by 2060, with total revenue losses of US\$26 billion. This is equivalent to three-quarters of aid transfers to the region. The impact on nutrition, health and poverty will be enormous. In fact, through its impact on agriculture, an additional 600 million people could face acute malnutrition by 2080. Yields from rain-fed agriculture could be reduced by up to 50 per cent between 2000 and 2020, according to the Intergovernmental Panel on Climate Change.

Arid and semi-arid areas in the region are projected to increase by 60-90 million hectares with changing rainfall patterns and desertification by 2090 (see Map). Up to 250 million people in the region could have their livelihoods and human development prospects compromised by a combination of drought, rising temperatures and increased water stress by 2020.

**Map 1: Africa's expanding drought areas**



More than 25 per cent of Africa's population lives within 100 km of the coast. Sea levels are projected to rise in Africa by 15–95cm by the year 2100, consequently endangering 30 per cent of Africa's coastal infrastructure through inundation and coastal erosion. The number of people at risk from coastal flooding will increase from one million in 1990 to 70 million in 2080.

In February 2007, Mozambique experienced its worst flooding in six years, killing dozens, destroying thousands of homes and flooding 80,000 hectares of crops in the Zambezi valley. At the beginning of this year (January 2008), floods in the southern Africa region displaced thousands of people in Mozambique and killed at least 27 people in Zimbabwe.

<sup>1</sup> Mandelsohn et al cited in Boko et al. , 2007.

## Climate change and the poor

For poor people, climate related shocks are not ‘here today gone tomorrow events’. Instead, it is a matter of the most vulnerable facing a series of incremental risks that could lead to lifelong destitution. In sub-Saharan Africa where income is tied to rainfall, income variability trails rainfall variability, as demonstrated by Ethiopia (see Figure 1).

**Figure 1: Income variability trail rainfall variability in Ethiopia**



Loss of agricultural revenue may mean transferring children from classrooms to the labour market thwarting efforts at achieving universal primary education. This in turn could lead to inter-generational poverty and low human development trap.

Household food insecurity resulting from low agricultural productivity and declining incomes, threatens nutritional status of children and their future human development prospects. In Ethiopia for instance, children aged five years or less are 36 per cent more likely to be malnourished and 41 per cent more likely to be stunted if they were born during a drought. This translates into two million additional malnourished children in Ethiopia alone. In Niger, children aged two years or less are 72 per cent more likely to be stunted if they were born. This has implication for educational outcomes and future prospects of these children.

## Water Availability

Africa already suffers from high rainfall variability. It is projected that between 2080 and the end of the century, average annual rainfall along the Mediterranean coast of Africa could decrease by one-fifth. The northern West African coast will also suffer considerably decrease in rainfall. The extreme west of southern Africa is projected to experience up to 40 per cent decline in rainfall. In contrast, tropical and eastern Africa may experience increased rainfall of up to seven per cent<sup>2</sup>. The implications for human development are many.

With reservoir levels already low in many parts of the region, projected changes in the climate are set to put further pressure on water availability. Between 75 and 250 million people in the region will be at risk of water stress with a one degree centigrade increase in temperature. This may lead to local and/or regional conflicts and affect economic development. For example, UNEP's investigation into links between climate and conflict in Sudan, predicts that the impact of climate change on stability is likely to go far beyond Sudan's borders.

## Climate change and gender

There is a differentiated impact of climate change effects on women and men. In most of the developing world food processing, water and firewood collection are traditional female gender roles. Women's livelihood strategies are also disproportionately affected by climate change because they depend more on natural resources. Their limited access to and control over resources, technologies and credit mean that they have fewer resources to cope with climate change risks.

<sup>2</sup>Boko, M. et al.

With increased droughts and desertification, women will have to walk further for water and firewood, in addition to caring for HIV/AIDS victims and orphans, leaving them with little time to engage in economic activities. One study in Tanzania for example, indicates that the amount of time females use collecting water and fuel wood is up to 250 hours and 700 hours per person per year respectively<sup>3</sup>. Distance to fuel wood sources could be up to five kilometres. The most common form of transportation of fuel wood is head-load, and sometimes this is done with a baby strap on the woman's back. This makes them vulnerable to back injuries as they travel long distances with a load of wood. Sometimes girls have to forgo their education to fetch wood for the family, trapping them in inter-generational poverty. Women have different perspective and expertise when it comes to climate change adaptation yet they are under-represented in climate change decisions.

### **Climate change and health**

Climate change will affect not only natural resource base but could also have implications for human health. Vector-borne diseases such as malaria are already placing national healthcare systems under strain. Such diseases are driven in part by climate change with several sub-Saharan African countries experiencing increases in malaria outbreaks; that can largely be explained by recent changes in temperature and rainfall. Exposure rates to malaria are projected to increase by 16-28 per cent by 2060. This could result in additional 200,000 child deaths annually.

Climate shocks are also a powerful threat to poor people's (especially poor women's) most valuable asset—their health and their labour. Deteriorating nutrition and falling income increase vulnerability to illnesses and limited resources for medical services. Forced trade-offs in health and nutrition are risk-multipliers for human development reversals.

### **Climate change mitigation and access to modern energy services**

Inequalities in access to modern energy services mirror wider inequalities in economic growth and industrial development. For the 22 countries in low human development category, electrification rate ranges from 6-50 per cent. While climate change and reduction in fossil fuel use are major challenges of our time, expanding provision of affordable modern energy services to poor people in sub-Saharan Africa poses a more immediate challenge.

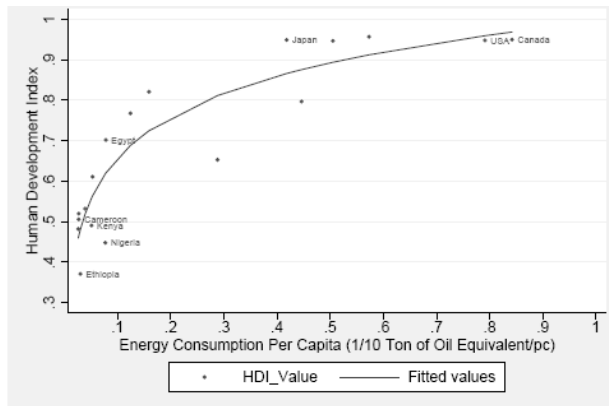
Access to modern energy services is particularly important in meeting the MDGs—eradicating extreme poverty, achieving universal primary education, promoting gender equality and women's empowerment, reducing child mortality, improving maternal health and ensuring environmental sustainability. In addition to supporting economic growth and generating employment, access to modern energy services enhances quality of life. Generally, there appear to be a link between access to modern energy and human development (see Figure 2).

In Mali for example, access to energy services has changed the lives of villagers tremendously, especially women. The social impacts of access to electricity includes but not limited to improved service delivery – lighting of health centres, schools, refrigeration of vaccines and community services such as milling of grains and access to information and increased girls enrolment. There also appear to be a relationship between per capita energy consumption and human development

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<sup>3</sup> Modi et al. 2005

Figure 2: Per Capita energy consumption and HDI value, 2004



Only one-third of the people in sub-Saharan Africa use modern energy services. Over 80 per cent of the population depends on traditional biomass for cooking. Indoor air pollution resulting from the use of solid fuels claims the lives of 1.5 million people each year—that is 4000 deaths a day. More than half of these deaths occur to children below the age of five and a majority of the victims are from sub-Saharan Africa.

Access to modern energy services will improve the lives of women by improving their health condition, reducing their time poverty and improving the productivity of their income generating activities.

The effect of fuel wood use on women's health, future potential and safety can be quite severe. Transporting heavy loads of firewood on foot makes them vulnerable to back injuries. Sometimes girls have to forgo their education to fetch wood for the family, trapping them in inter-generational poverty. A study in Malawi found that literacy levels were lower in fuel wood stressed southern and central regions compared to the northern region where fuel wood is more easily available. Under the current energy scenario, it is unlikely that sub-Saharan Africa will achieve the MDGs.

While fossil fuel use, exploration, transportation, transformation and distribution have detrimental effects on the world's atmosphere, any strategies to deal with climate change should not limit the sub-Saharan Africa's quest to meet its basic energy needs for development and poverty reduction. One of the ways in which access to modern energy services can be expanded while at the same time mitigating global climate change; is to improve access to electricity through grid-connected renewable energy systems. However, these systems require large capital investments. International partnership is required to raise the required financial and technical resources needed to expand access to clean energy.

Appropriate technologies such as solar cooking stoves, which provide opportunity for direct use of radiation for cooking without a detour to electricity, are proving useful in some African countries. For example, in 2001 the Papillion cooking stove was introduced in Burkina Faso. The stoves cost CFA Franc 115,000 (US\$191). While this is expensive in a low income country like Burkina Faso, they are seen as an asset and so people are ready to invest in them. Access to the Papillion cooking stove has helped reduce average household fuel expenditure from CFA Franc 8,500 (US\$14.2) to CFA Franc 3,750 (US\$6.25)/per month according to a survey in 2003.

Further, because the stoves are produced locally, they have generated jobs for the people. In Burkina Faso, two workmen produce one stove a day. Allowing time off work, this means 250 cookers could be produced per year. Interest in the cookers has been aroused in neighbouring countries and the producing company (Acmes) has received orders. Producing 100,000 cookers will generate 800 jobs and provide income for poor people.

### Climate change adaptation capacity

There is a time lag between climate change mitigation and outcome; in this regard there is no alternative to climate change adaptation. If all emissions were to stop today, the CO<sub>2</sub> that has already been emitted will result in an enhanced GHG effect for the next 50 years. While sub-Saharan Africa is highly vulnerable to climate change effects, it has little capacity to adapt. The

developed world is already investing heavily in the development of climate defence infrastructures. In sub-Saharan Africa however, adaptation challenges have to be met by governments operating under severe financial constraints and by poor people themselves. With limited access to formal insurance, low income and limited assets, poor households have to adapt to climate shocks under more constrained conditions.

For the poor, climate shocks affect livelihoods by wiping out crops, reducing opportunities for employment, pushing up food prices and destroying property. People are forced to make choices, which may ease immediate suffering but have long term implication for human development.

Access to meteorological information is imperative for adaptation because of the over dependence on rain-fed agriculture. However, the region has the world's lowest density of meteorological stations—per 25,460 square kilometers—one-eight of the minimum level recommended by the World Meteorological Organization (WMO).

### **What needs to be done?**

Climate science has enabled us to predict the impacts of climate change and ecological processes that will shape them. Economic analysis has enabled us to develop a better understanding of the costs of inaction. But climate change is not just about science or economics. It is about social justice and the human rights of the world's poor and marginalised people. Failure to take action would tantamount to a systemic violation of the human rights of poor and vulnerable people. It will undermine human development and the expansion of opportunity for poor people and their children. As argue in the Human Development Report, the world is drifting towards a tipping point that could unleash sustained and rapid reversals in human development across the 21<sup>st</sup> Century, especially in sub-Saharan Africa.

It is therefore imperative for the world to place ecological concerns at the centre of development. A binding international agreement to cut greenhouse gas emissions while at the same time reflecting on the circumstances and capabilities and the need for sustainable poverty reduction in poor regions like sub-Saharan Africa, is needed. The international community needs to provide support to strengthen the capacity of sub-Saharan Africa to assess climate change risks and integrate adaptation into national planning. For example, development of community based infrastructure for water harvesting can reduce vulnerability and help communities to cope better. There is also a need for economic diversification as an important adaptation strategy for sub-Saharan African countries that rely on narrow ranges of climate-sensitive economic activities.

A radical new approach to adaptation which includes mobilisation of resources not just for environmental climate proofing, but also for social protection programmes aimed at building the resilience of vulnerable groups and empowering people to manage climate risks is required. These programmes should include employment guarantee measures in drought prone areas and a range of social transfer to help vulnerable people create and manage their own schemes for coping with potentially catastrophic risks. For example, Ethiopia's Productive Safety Net Programme (PSNP), which provides programme participants with up to US\$4 monthly in cash or food, has helped five million people deal with shocks.

It is important to also note that climate change effects would go far beyond the MDG target period. Scaling up adaptation should be seen as part of the post 2015 strategy for building on achievements of the goals. Failure to act on adaptation would erode the progress made towards the MDGs. Hence, adaptation has to be at the centre of aid partnership so that climate change can be addressed in all sectors. Further, adaptation should not be seen in isolation but rather integrated in wider poverty reduction programmes.

Support is also needed to expand the continent's meteorological monitoring network, so that farmers can access better information about climate patterns. Mali represents a successful

experience seasonal forecasting systems and dissemination of climate related information. The Direction Nationale de la Météorologie has developed a programme for transmitting rainfall and soil moisture information through networks of representative farmer's organisations, NGOs and local government. Evaluation of results in the 2003-2004 cropping season show that crop yields and incomes, were higher in areas where agro-meteorological information was used. There is also a need to invest in water-storage or "water harvesting" facilities in countries with high levels of rainfall concentrated in a few weeks of the year.

The 2007/2008 Human Development Report calls for international climate change mitigation to ensure that average global temperature do not rise beyond two degrees centigrade above pre-industrial levels. However, the principle of common but differentiated responsibility enshrined in the Kyoto Protocol needs to be applied when it comes to emission reduction in sub-Saharan Africa. The region cannot cope with the current and projected demand for fuel-wood by its rapidly growing population. There is therefore a need to carefully plan for ways that will encourage a shift of primary energy source from fuel-wood to other renewable sources of energy. If the region is to achieve any significant economic growth and lift its people out of poverty, it must improve access to modern energy services. Early adoption of clean energy technologies would enable sub-Saharan Africa increase access to modern energy sources without increasing emission levels. This is one area where international cooperation on finance and technology transfer is crucial.

Access to modern energy services could be enhanced by promoting decentralised renewable based generation. Energy sector reforms should protect the interest of poor people by providing wide range of renewable energy technologies to ensure that poor people can make a choice based on their income and comparative advantage. Of utmost importance is addressing energy-gender issues in macro level policies.

### **What role can the Tokyo International Conference on African Development (TICAD) play?**

TICAD initiatives have stimulated a wave of innovative activities towards consolidation of peace, human-centred development and poverty reduction through economic growth in sub-Saharan Africa. The experimental work at West Africa Rice Development Association (WARDA) in Benin, Côte d'Ivoire, The Gambia, Guinea, Mali, Nigeria and Togo, shows a potential for increasing farmers' harvest. TICAD initiatives have also provided approximately three million people with safe water supply and 2.6 million children are receiving educational opportunities. However, these efforts could be thwarted by climate change effects. Household food security is threatened by more frequent floods and droughts. Water scarcity is a potential source of local conflict. School infrastructure stands the risk of being wiped out by floods. Therefore, TICAD could support efforts to address environmental issues and assist adaptation efforts so as to remove constraints to economic growth and poverty reduction, and climate proof development infrastructure.

Sub-Saharan Africa needs to improve access to modern energy services to supply water to its homes and cities, light up towns and villages, power up our schools and hospitals, and improve livelihood security. While the continent has one of the highest hydro-electricity potential in the world, as well as some of the best opportunities for renewable energy sources such as solar, geothermal, and wind power, these opportunities are not tapped for lack of financial and technical resources. Improvement in access to modern energy services for sustainable development could be one area of extended cooperation between sub-Saharan Africa and Japan. This could be in the area of expanding access to solar and wind energy.

In conclusion, I would like to emphasise that the poor are suffering and will continue to suffer with climate change if we fail to do something about it now. They are at greatest risk to face human development reversals leading to low human development traps.



Mitigation and adaptation are not either or activities, they both have a role to play. Rich countries must cut emissions by 30 per cent by 2020 and at least 80 per cent by 2050. International cooperation on finance and technology transfer is needed.

Extreme inequalities in adaptation capacity exist. International cooperation has been slow to materialize when it comes to adaptation and this should be addressed with urgency. Adaptation plans need to be part of wider strategies of poverty reduction.

Finally, developed countries should deliver on their commitment to allocate 0.7 per cent of GNP to ODA to help developing countries meet their developing challenges. Additional resources need to be made available for climate change adaptation. This is not charity, it is a social debt owed to poor and vulnerable people in sub-Saharan Africa.

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