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About Joto Afrika

Joto Afrika is a new series of printed briefings and online resources about adapting to climate change in sub-Saharan Africa. The series will help people understand the issues, constraints and opportunities that poor people face in adapting to climate change and escaping poverty.

Joto Afrika is Swahili; it can be loosely translated to mean 'Africa is feeling the heat'. Future issues will focus on: managing water resources; climate change and human health; and climate change and pastoralists.

Please tell us what you think about this second issue of *Joto Afrika* and what you would like to read about in future issues – contact details are on **page 8**.

Managing Africa's water in a changing climate

Editorial

Throughout history, African societies have experienced various climate-related events and pressures. But over the past 30 years, both drought and floods have increased in frequency and severity. The continent is now burdened with nearly one-third of all water-related disasters that occur worldwide every year.

A warmer earth may lead to many projected changes over the coming decades, including more extreme weather events, widespread drought and flooding, sea level rise and retreating glaciers. Africa has already experienced these, especially changes in rainfall patterns and rising sea levels. It will most likely experience each in greater intensity in the future; the Intergovernmental Panel on Climate Change states that Africa is the most vulnerable continent to projected climate changes.

Widespread water scarcity on the African continent is expected to be further aggravated by a number of emerging threats. These include climate change, as well as an increasing population and the subsequent increasing demands for water. Around 25 African countries are expected to experience water scarcity or water stress.

Impacts of water scarcity

Climate change has the potential to impose severe pressures on water availability and accessibility. Currently, 300 million Africans (more than 35 percent of the population) have no access to safe drinking water, and 313 million lack basic sanitation. According to the United Nations, sub-Saharan Africa (with the exception of Uganda and South Africa) is failing to meet the Millennium Development Goal targets, to halve the number of people without access to clean water or sanitation by 2015. Climate change is expected to make it even harder to achieve these targets.

Africa has the highest population growth rate in the developing world, and food production is not keeping pace. Two of the most limiting factors to improved food production are the quality and quantity of available water resources. Rainfall variability in many regions of Africa directly affects agricultural

productivity – rainfall is the most relevant climatic variable of food production in Africa. As rainfall becomes more variable, feeding Africa's rising population will become an even greater challenge.

Disputes and conflicts over water

Since food security is directly linked to water availability and accessibility, increasing water scarcity will increase the potential for conflict within and between countries. The Darfur dispute in western Sudan stems in part from competition over water, mainly between different resource users; nomads and farmers share water and land in the region, but these are both getting increasingly meagre due to climate variability and expanding desertification.

The increasing severity and scale of impacts resulting from climate change is likely to exceed the coping capacity of many communities and countries. This situation could lead to severe socio-economic and environmental impacts and will require additional adaptation efforts. In this second issue of *Joto Afrika*, the six articles and case studies presented focus on climate change and water resources, reflecting on experiences and lessons extracted from different regions in Africa. Reviewing these lessons, the following points become clear:

- Current water management practices in Africa are unlikely to be adequate to cope with the projected negative impacts of climate change on water availability and distribution.
- Africa needs a much greater focus on increasing people's adaptive capacity to climate variability and climate change over the long term.
- Key to improving future adaptation efforts is the incorporation of current climate variability into water-related planning and management.

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Community members draw water from a rock catchment in Mutomo-Kenya ©ALIN,2009



Building sand dams to conserve water

Research Summary

A family drawing water from a sand dam in Machakos Kenya ©ALIN 2009

In Kitui, eastern Kenya, the Sahelian Solution Foundation (SASOL) is helping communities to build small-scale sand dams. This indigenous technology helps people to access water for domestic and agricultural use during the region's long dry seasons.

The dams are concrete weirs built across seasonal river beds. They capture sand as it is carried in torrid river water during the short, intense rainy seasons. The captured sand stores millions of litres of water upstream of each dam.

Livelihoods in Kitui are under increasing stress as a result of unpredictable rainfall patterns and increasing desertification. This water scarcity is the major barrier to development in this region, with climate change making water even more scarce.

But sand dams are increasing the adaptive capacity of smallholder farmers. Over the past 10 years, SASOL a local non-governmental organisation, has provided over 100,000 people with better access to water through building sand dams, making communities less vulnerable to droughts.

See also

'Potential for community based adaptation to droughts: Sand dams in Kitui, Kenya', *Physics and Chemistry of the Earth* 33 (2008) 67-73, by R. Lasage, J. Aerts, G.-C.M. Mutiso, and A. de Vries
<http://tinyurl.com/J-Afrika2-1>

Socio-economic Impacts of Sand Dams, Case Study in Kitui District, Kenya Faculty of Earth and Life Sciences, Vrije Universiteit, Amsterdam, by E. de Bruijn and W. Rhebergen, 2006

Benefits from sand dams

Analysis of data collected in Kiindu catchment shows that after the sand dams were built, access to water improved. There was an increase in domestic water use of about 50 percent, and a doubling of agricultural water use. Farmers rapidly shifted to growing water demanding crops such as tomatoes, onions, fruit trees and kale.

This study also shows that the percentage of households growing irrigated crops rose from 37 percent before dam construction to 68 percent afterwards. From these households, 50 percent sold their harvest, earning between 1,000 and 13,000 Kenyan Shillings (Ksh.) per year (US\$ 13-175) (*de Bruijn and Rhebergen, 2006*).

Challenges

The socio-economic indicators show that sand dams are a successful way to adapt to drought. However, there are still challenges with this technology:

- The technology is both labour and capital intensive; most local communities cannot implement it without external help.
- Despite its cultural acceptability, this water harvesting technique has not been widely replicated in other areas, probably due to high costs of materials, the labour involved, and limited technical skills.
- Due to the prolonged drought, many sand dams are now drying up.

Recommendations

The government and local organisations should consider the following:

- Increase public awareness about climate change impacts, and encourage people to implement available adaptation options, for example planting drought resistant crops such as sorghum, cow peas, cassava and sweet potatoes.
- Develop and promote agricultural rainfall risk insurance schemes.
- Improve access to natural water sources, for example by sinking boreholes for drinking water.
- Create seed and food banks to ensure the safe-keeping of harvested produce.

Over 450 sand dam sites have been developed in Kitui, bringing water closer to households.

- Promote local savings and credit, for example by encouraging financial institutions to provide credit to farmers to build sand dams, in a timely manner and at low interest rates.

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Kitui District, Kenya

Kitui District is a semi-arid region 150 km east of Nairobi. The total land area is approximately 20,000 km², including 6,400 km² in Tsavo National Park. The area is characterised by highly erratic and unreliable rainy periods.

The main economic activity is rainfed agriculture. Irrigated agriculture only takes place on small plots on the river banks and water availability is often the limiting factor for sustainable agriculture development. During prolonged dry periods the farmers are dependent on relief food from donors. In 2007 and spring 2008, for example, up to 50 percent of the inhabitants of Kitui received food aid. Besides farming the main economic activities are charcoal burning, brick making and basket weaving. During periods of prolonged drought women and children walk up to 10-20 km in search of water.

Conserving water through planting trees

Case study: Cameroon

The Bamenda Highlands in northwest Cameroon have long experienced water shortages. These have been largely due to the planting of eucalyptus trees in place of natural vegetation (eucalyptus soak up a lot of water) and poor farming practices, particularly excessive grazing, which often involves burning natural tree cover. But the problem is getting worse due to climate variability and change – an increasing concern for many people in the region.

Rainfall in Cameroon has declined by two percent per decade since 1960. The pattern of the rainy seasons is also changing; in the Highlands, rains are not occurring when expected and the end to each season is irregular. In 2008, the dry season rains (small, isolated bursts of rain during the longer dry season) did not come at all.

The intensity of the rain is also unpredictable. When it does come, it is often in short, intense bursts that cause further problems – a highway to Bamenda was recently closed for days after landslides caused by heavy rain. This trend of increasing climate variability and extreme events is consistent with the Intergovernmental Panel on Climate Change's 2007 projection for the region.

Tree planting

Green Care, a local non-governmental organisation based in Shisong, near Kumbo, has been running tree planting workshops with communities in the highlands. The aim is to restore native forests around village catchments to protect water supplies.

- Green Care grows saplings of native tree species in its nursery, to be planted around water catchments.
- The local community help to plant and care for the saplings; this involvement helps to make people aware of environmental problems and the need to protect forests.
- Kumbo Council assists with clearing eucalyptus trees, creating space to plant native trees. The council also helps to pay for the cost of growing the saplings.

It is important to ensure that the saplings mature, and are cared for in the years after planting. Many tree species planted have

additional properties, such as producing fruit or having medicinal value, so that villagers can earn an income from the replanted trees – a further incentive to protect them.

Green Care provides training on how to care for saplings, and encourages women to get involved. Women are usually responsible for collecting water in the region, and therefore benefit from an improved local water supply. In all communities, a good number of women have participated in sensitisation meetings to raise awareness of the problems, and also in planting activities.

Achievements

Trees have been planted around seven rural community water sources, and in one township. Since 2007, 11,718 trees have been planted, 98 percent of which were indigenous. The replanted tree cover acts as a store for rain when it falls, and the water is released more slowly than where there is no tree cover. This regulates flows from springs and stream heads. More water is stored in the soil as well—tree cover where the ground was previously burnt reduces the speed of runoff, allowing more water to soak into the soil. Clearing eucalyptus trees also reduces the amount of water being soaked up.

But these achievements have not been realised without serious challenges, which continue to restrict Green Care's efforts.

- The most important constraint is the fact that Green Care rely entirely on voluntary efforts, so they cannot plant trees all the time (most members are busy farmers, or have full time jobs).
- Communities a long way from Shisong have heard of the project and want to participate, but Green Care do not have the money or transport to reach them, limiting the scope of the project.
- Some planted trees have been damaged by fire; many were accidents, but some were the result of persisting traditional grazing techniques, which require the ground to be burnt.

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Green Care members plant saplings near Shisong, northwest Cameroon. This helps to restore forest cover and protect local water supplies. © Green Care, 2009

Protecting the Congo Basin

The Congo Basin, part of which is in Cameroon, is a major water source in West Africa. The Congo River has the second-largest flow of any river in the world, behind the Amazon. Because large sections of the river basin lie above and below the Equator, its flow is stable, as there is always at least one portion of the river experiencing a rainy season. But deforestation is a major problem here – one percent of the total area is thought to be cleared each year.

A large part of the rain in the Congo Basin comes from the recycling of moisture by the forest. Further deforestation could lead to significant disruptions to the water cycle in the region, threatening supplies to thousands of communities.

Planting trees can help to protect local water sources, but the Congo Basin is also central to efforts to prevent climate change (known as mitigation) through avoided deforestation. Trees act as carbon sinks, storing carbon dioxide (CO₂), a greenhouse gas that would otherwise be in the atmosphere. As trees are cleared for timber, or burnt for agricultural and industrial development, this carbon is released, increasing CO₂ in the atmosphere and worsening climate change.

Global efforts to combat deforestation, and to pay developing countries to protect their remaining forests, will be a major discussion point at the United Nations climate change negotiations in Copenhagen, Denmark, in December 2009.

See also

Climate change in Cameroon, OneWorld.net Guide
<http://uk.oneworld.net/guides/cameroon/climate-change>

Managing water resources in the IGAD Region

Research Summary



A young woman in Mityana District, Uganda, collects water at an open well shared by about 500 families. © Greg S. Allgood, Courtesy of Photoshare, 2007

The countries in the Intergovernmental Authority on Development (IGAD) region – Djibouti, Ethiopia, Eritrea, Kenya, Somalia, Sudan and Uganda – are under severe water stress. The availability of fresh water in the IGAD region is less than 1,700 m³ per capita per year. In Eritrea, Kenya and Djibouti, it is less than 1,000 m³ per capita per year. In 2025 this will dwindle to less than 1,000 m³ per capita for almost all the countries.

This lack of water has severely constrained food production, ecosystem maintenance and economic development. In 2004, 70 million of the region's 178 million people lived in areas prone to extreme food shortages.

Conflicts over water

Water scarcity leads to conflict. In February 2009, tens of thousands of people were reported to have fled their homes as a result of fighting between rival groups in southern Ethiopia. Reports suggest 300 people may have been killed and more than 100,000 displaced. Armed conflicts, particularly over water, are not unusual in southern Ethiopia. They have been increasing in recent years because drought has made control over wells and water points even more critical.

The countries in the IGAD region have a very low capacity to address current and impending water scarcity and environmental insecurity:

- Most are affected by political instability, governance problems, the activities of

liberation movements, post-election disturbances and wars between and within countries in the region.

- Transboundary water cooperation negotiations take a very long time, and except in Ethiopia, there are no visible efforts to develop long term water resources development plans for the region.

Recommendations

National and regional organisations need to assess the sustainability of their environmental resources. They need to get out of the routine annual planning exercise and engage in long term assessment of the environmental security of their citizens and the wellbeing of their environment.

The UNDP 2006 Human Development Report estimates that sub-Saharan Africa will reach the millennium development goals (MDG) for water in 2040 and for sanitation in 2076. The MDG has a modest goal of halving, by 2015, the proportion of people without access to sustainable safe drinking water.

Governments are the key institutions in the region. They carry the ultimate responsibility to provide sustainable livelihoods for their citizens and address issues related to war, internal strife, and resource management and use.

The region's governments must coordinate their efforts to preserve and protect the environment, and ensure the sustainable use of resources. They need to harmonise national strategies and policies, for example by strengthening meteorological and hydrological services and monitoring networks. Furthermore, they should:

- make access to water a human right and establish legislation for minimum service levels
- draw up national strategies for water and sanitation
- initiate transboundary water resources discussions for shared basins, for example the Juba-Shebelle and Omo-Turkana basins, and finalise the Nile cooperative framework.

Development partners must increase their financial assistance for investment in water resources. At a local level, civil society groups that are working closely with communities need to strengthen and enhance their investment in the water sector. Civil society groups also need to build and strengthen the capacities of communities in conflict prevention and resolution, by building on local conflict resolution mechanisms and strengthening the culture of dialogue.

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See also

Water Scarcity and Environmental Insecurity in the IGAD Region, by Gedion Asfaw and Sebsebe Demissew. Paper presented at the FESS-IGAD Workshop on 'Environmental Security in the IGAD Region: An Approach for Building Sustainable Development and Peace', May 5–7, 2009

'Thousands Flee Ethiopia Clashes', BBC World News, 26 February 2009
<http://news.bbc.co.uk/1/hi/world/africa/7912242.stm>

Adaptation in the Sahel

Africa's vulnerability is evident, so we need to shift the focus to finding solutions, and in doing so we can build on local knowledge and experiences. For example, in the African Sahel, repeated drought cycles have forced people to adapt and invent various practical solutions. Such successful adaptation measures emphasise the human capacities and determination to overcoming the Sahel's harsh environmental and climatic challenges.

Africa contains about nine percent of global freshwater, and is characterised by large disparities in rainfall distribution and water availability across the continent; western and central Africa have significantly greater precipitation than the north and south of the continent.

Adapting to changing rainfall patterns in Lukwanga

Case Study: Uganda

Ugandans say: “If you plant a dog’s tail in the ground, it will grow”. Uganda’s location across the Equator means it has two rainy seasons each year and these plentiful rains have traditionally produced large quantities of food. But farmers are starting to experience the effects of climate change.

Agriculture is rain-fed and therefore vulnerable to increasing climate variability. Experts predict that climate change will increase rainfall in Uganda, but the distribution during a rainy season – a critical factor for agricultural production – is likely to change.

Rainy seasons have already become less reliable. In some years, farmers have failed to prepare their land before the rains arrive. In others, they plant too early and their crops have withered by the time the rains eventually come.

As rainfall patterns change, severe droughts are also increasing in frequency (see graph). Droughts have occurred in most parts of the country in recent years, especially the northern and western parts. This has led to food insecurity and social conflicts, as people search for pasture and water for animals.

Adapting to changing rainfall patterns in Lukwanga, Uganda

Lukwanga is a farming community near Kampala. The region has two rainy seasons, in February and March, and then September to December. But in the last three years, rains have been unreliable, arriving late and in short, intense bursts, rather than evenly throughout the rainy season.

Ndugga Evaristo, a local vegetable farmer, has seen many of his crops fail this year due to the lack of rain. His bean harvest failed completely, as the plants flowered before the

rains arrived. His bananas are stunted due to little early rainfall, and his eggplants are small and dropping off the plants before harvesting due to water shortage.



Ndugga Evaristo with his ruined egg plant crop. The vegetables are very small, and many have been ruined by dropping off the plant before harvesting. © ALIN 2009

Ndugga has invested in pigs to supplement his falling income from vegetables. Having read about problems with rearing goats and cattle in dry areas, he considers pigs a better option. They require less water to put on weight and do not need large grazing areas, eating any surplus waste instead. There is also a growing local market for pigs, supplying the ‘Pork Bars’ in nearby Kampala. An adult male pig sells for up to 200,000 Ugandan Shillings (about US\$ 100) and Ndugga can also use their manure for his crops.

Other farmers in Lukwanga are coping in



Bricks drying in the sun. Many young people in Lukwanga have started to make bricks, but it is hard to make money from this as profits are very low. © ALIN 2009



Ndugga has two pigs, and hopes to increase his herd to ten soon. © ALIN 2009

different ways. Zimbe Daisy has dug terraces on her land, to trap water as it runs off the land. She also has a water butt which collects rainfall from her roof. This water is used for livestock, and is less labour intensive than collecting water from wells.

Not all adaptation strategies are appropriate, however. Many young farmers have started making bricks to supplement falling incomes from agriculture. But this requires a lot of timber, which is burnt to fire the bricks. Reducing tree cover makes the soil vulnerable to erosion during bursts of heavy rain. Also, making bricks uses topsoil, which reduces soil fertility.

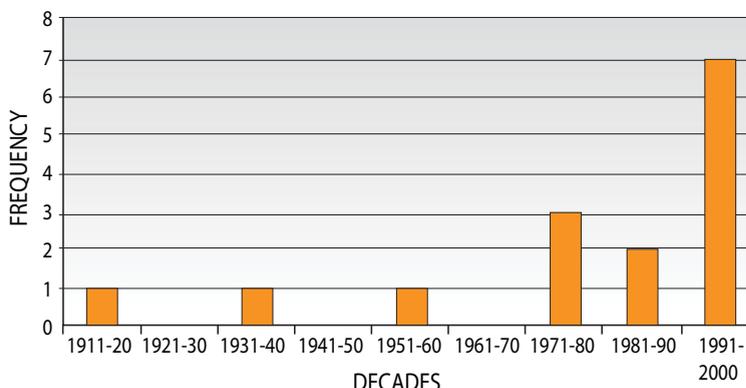
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Joto Afrika videos

Watch ALIN videos on water resources in Rift Valley Kenya. The videos are about how climate change has affected Lake Naivasha and the livelihood of people around it.

www.youtube.com/user/ALINmedia

OCURRENCE OF DROUGHTS IN UGANDA



Source: Climate Change & its Implications to Livelihoods and Economic Development in Uganda, Environmental Alert, 2007

Joint management of a Transboundary Saharan Aquifer System

Research Summary

Millions of people in Algeria, Libya, and Tunisia are dependent on an underground water basin known as the North Western Sahara Aquifer System (NWSAS). To ensure use is sustainable, the countries operate a joint management and decision making process.

The NWSAS covers over one million square kilometres, in a region that receives very little overhead rainfall. The basin supplies over 2.5 billion cubic metres of water annually for domestic use, industry and particularly irrigation. Over 600,000 small-scale farmers in Algeria depend on the aquifer, while Tunisia and Libya each have about 40,000 hectares under large-scale production, growing date palms and fruits for export.

The challenge

The aquifer faces many threats:

- The number of people directly dependent on the basin is projected to rise from 4.8 million in 2000 to 8.8 million by 2030,

putting a strain on this resource.

- The number of water drilling points has increased exponentially in the last 30 years, to a current level of more than 17,000 water points.
- The annual natural recharge rate of the aquifer is only half the rate of abstraction.
- What happens in one part of the basin often affects other parts, so it has the potential to create social, economic and political tensions between the countries, which have few alternative water sources.

The solution

These challenges raised serious questions about the long term viability of the NWSAS in a region that already shows signs of water deficiency. The problems were exacerbated because each country had different policies to manage water, and there was no integrated water information management system for the basin.

In 1998, the three countries addressed this by undertaking a joint research project. The research, implemented by the Sahara and Sahel Observatory (OSS), aimed to: use scientific cooperation to establish a framework for managing the shared water resource; improve the knowledge of the member countries; develop a joint working hypothesis; use innovative technologies to gather hydrological data; establish a shared database and information system to help make informed decisions; highlight the most vulnerable areas in the mid and long term; and identify new withdrawal zones that could improve current exploitation.

- The countries have all agreed to stop using demand for water to inform decisions; for example, they now focus on where returns per cubic metre of water are highest.
- The project has made recommendations to the different countries based on their unique circumstances; for example, Tunisia was asked to use more efficient forms of irrigation, such as drip irrigation.
- In June 2008, the three countries decided to set up the Coordinating Unit of the Consultation Mechanism within the OSS headquarters, in order to: update their common management tools (database, GIS, models); exchange data and information; and set up their common monitoring network (piezometry and water quality).

Many water bodies in Africa are transboundary. The success of this project demonstrates the need for joint strategies to maintain and improve the quality of water resources, which are reducing in many regions across the continent.

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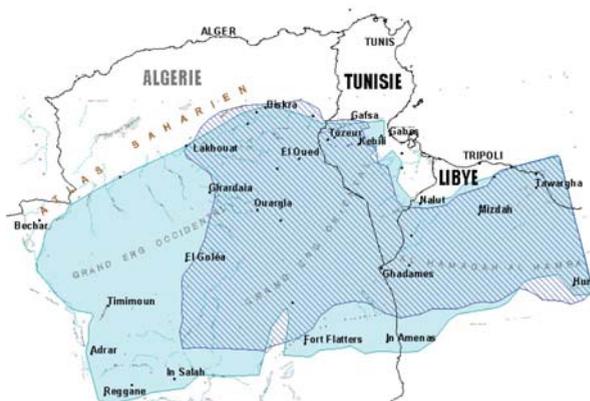
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Map1: The limits of the North Western Sahara Aquifer System (Source: OSS)



Source:

Current and Potential Environmental impacts related to the abstraction and use of NWSAS water in Algeria, Tunisia and Libya. Sahara and Sahel Observatory, 2005.

Implementation of the NWSAS piezometric network. Sahara and Sahel Observatory, 2005

Modelling of the Aquifer System of the Western Basin of the North-Western Sahara. Sahara and Sahel Observatory, 2006

The North-Western Sahara Aquifer System (Algeria, Tunisia, Libya): concerted management of a transboundary water basin, Synthesis collection, Sahara and Sahel Observatory, 2005

The research project aimed to answer several key questions, including:

- a) how to exploit the NWSAS beyond the recharge rate within a sustainable management perspective
- b) how to ensure maximum water withdrawals without degrading the resource
- c) what sustainable development themes consider the three countries' different plans
- d) how to promote a more efficient use of water as the countries continue to adopt new water saving techniques, using scientific and technological research

Key results so far include:

- A study of the entire basin's geology and hydrology has helped improve knowledge of NWSAS's hydrological behaviour, the risks it faces, and socio-economic and environmental conditions.

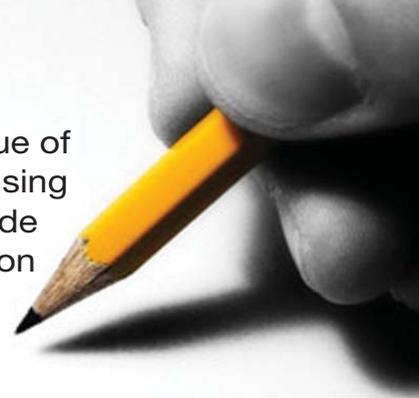
Join the AfricaAdapt network

AfricaAdapt is an independent network in French and English, focused exclusively on Africa. The aim is to facilitate the flow of climate change adaptation knowledge for sustainable livelihoods between researchers, policy makers, civil society organisations, and communities who are vulnerable to climate variability and change across the continent.

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Letters to the editor

We welcome your feedback on this first issue of *Joto Afrika*. Please send us your thoughts using the contact details on **page 8**. Please include your full contact address or email. A selection of letters will be printed in the third issue.



Community Information Volunteer at a Maarifa Centre in Kajiado, Kenya © ALIN 2009

Dear Editor,

We are grateful and excited about your first copy of *Joto Afrika* Magazine. It is very informative and written in the simplest language which most of our local communities especially the farmers can understand. It was clearly explained what climate change is, its causes, current indicators / impacts and what it means to our future. In the forthcoming editions I would wish to see the following:-

- More insight, on the climate change causes and the physical / tangible indicators to a common citizen
- How can we collectively / globally mitigate against climate change
- How do we link the local NGOs, CBOs with the various national /international

organisations trying to capacity build or fund activities geared towards reduction of greenhouse gases (GHGs)

- For the sake of our East African Countries like Tanzania, Zanzibar and Kenya the editors can slot in a Kiswahili edition.

As an organisation we look forward to continue receiving the copies and also sharing information and our experiences with *Joto Afrika* readers.

Once again thank you for sending us this first born copy.

Peter Mbogo
Kenya

Dear Editor,

Thank you for the 1st issue of *Joto Afrika* with the special feature on adapting to climate change'. I very much liked the feature. I especially enjoyed reading the articles. The articles gave me profound and truly magnificent insight into the matter. I believe that many people know nothing about that at all, unless they read the articles in '*Joto Afrika*'.

Nestory Mujunangoma
Dares Salaam, Tanzania

Dear Editor,

I received with great joy the first issue of the periodical *Joto Afrika*. Apart from the challenging issues x-rayed, one most important thing to recognize is the wide geographical spread of the articles and research.

It is really very informative and shall surely serve as a piloting periodical to salvage the effects of climatic changes in Africa

I suggest some topical issues/problems be given to some researchers for subsequent publication in the coming issues. This will surely improve the research base of the periodical.

Keep it up, Thank you

E.Chukwu Onyeneke, PH.D

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Dear Editor

It is with pleasure that I received your first issue of *Joto Afrika*, Issue 1 July 2009. I found it to be a very important magazine for all of us. The environmental issue affects everyone. The environment is directly and indirectly attached with the economy, development, health, etc.

Hence, the involvement of all stakeholders in alleviating/decreasing problems related to the environment is vitally important. So the creation of such a journal 'Africa is feeling the heat' is timely and very mandatory. Please continue to inform us on the latest development/research related to the environment.

With best wishes

Amsalu Feleke Assistant Professor
University of Gondar
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Dear Editor,

I write to appreciate the first edition of *Joto Afrika*. I like very much the informative essays, like 'what causes climate change' etc. The edition has helped me improve my knowledge on climate change particularly about Africa. *Joto* is good and very necessary. Congratulations, especially to those who conceived the need for *Joto Afrika* and are doing everything to realize it. Please, keep up the good work.

Thank you

Gilbert Njodzeka.
Green Care Association
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Dear Editor,

I very much appreciate your efforts on establishing the link between effects of climate change and food security in Africa, congratulations for the first issue of *Joto Afrika*! On one hand it is a very good and needed step forward to alert people, governments and actors. However, in case the philosophy of the first issue is maintained, you may not trigger off action so desperately needed in terms of improved land use management. Blaming global climate change for the present disasters droughts and floods are causing is just one side of the coin: the causes for increasing climate variability and food insecurity are primarily of local or regional nature, which are called degradation of natural resources by men slashing/burning forests, wasting resources, pollution of soils and water bodies, civil wars leading to malfunctioning infrastructure, inadequate government practices, and low level farming practices among others.

It is not enough to enable people to adapt to the effects of climate change; it is still more important to teach people the local reasons and their wrong doings and the need for change.

Over population and unhindered population growth is by far the major threat to our natural resource base.

I'm looking forward to interesting discussions and reports about successful actions (like in Tigray, Ethiopia) and remain with best regards

Gerd Foerch

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Managing climate risk in South Africa's Western Cape

Research Summary

South Africa's Western Cape contributes almost one quarter of the country's gross farming income, but the region faces risks from projected climate variations. Farmers need help to adapt to both current climate variability and future climate change.

The Western Cape employs 17.8 percent of South Africa's farm workers, particularly in horticulture – the largest employer in the agricultural sector. The region has the largest horticultural output in South Africa. But in the last decade, dry seasons and insufficient water resources mean farmers have experienced strict water restrictions. In 2004-2005, these reduced agricultural production in the Berg River Basin – a highly productive part of the Western Cape – and led to water rationing in Cape Town.

The demand for water for domestic, industrial and agricultural uses is increasing due to development, population growth and the demand for food. Water is already scarce, with an average of just 550 mm falling in the plains each year, and drought is a regular threat. Most rain falls during winter, but peak demand for water is during the hot summer months, when there is almost no rainfall. This requires an expensive and complicated winter water storage and distribution infrastructure.

Modelling climate risk

Institutions in Africa must combine planning for economic development with planning for climate change. For example, better informed planning will help to prevent job losses in commercial farming resulting from climate change, and reduce the risks for small and resource poor farmers.

Since 2007, a consortium of South African universities has been organising the 'Managing climate risk for agriculture and water resources development in South Africa' project, focusing on the Berg River Catchment Area in the Western Cape. This project brings together scientists, farmers

and communities, with inputs from water policy institutions and water planners. It is addressing two significant problems:

- Relevant and important information from climate change forecasts is not being disseminated to water resource managers or integrated into water resources policy, planning and management.
- There is currently a shortage of integrated approaches for evaluating and making adaptation decisions related to water resources in South Africa.

The team is integrating climate change scenarios, a hydrological model, and an economic model to analyse and suggest the most practical and efficient ways of sharing water. This will demonstrate costs, benefits, and risks associated with likely changes in the climate, and suggest different approaches to land and water use.

The models aim to separate short-term variations in the region's weather from the likely long-term, enduring changes that may result from climate change. These will be shared with stakeholders so they can make better informed decisions about investments and water use. The basic modelling structure is almost complete, and testing and verification will start in 2010.

- The research team surveyed more than 350 farms in the study area to provide data for the models; this activity was extremely successful in raising awareness of climate change in the farming community.
- The team also held six regional workshops for farmers and other stakeholders, giving feedback on the farm surveys and discussing possible adaptation strategies.
- The Berg Catchment Management Authority has added climate change to its standing agenda, and this is now part of its planning and implementation processes.
- There is close collaboration between the research team and the Western Cape Systems Analysis, an ongoing project that

recommends water management options to South Africa's Department of Water Affairs. This means climate change is now a key part of water supply and demand management.

However, the project's short time frame – only three years – is a major constraint. The modelling results and the demonstration of the models can only take place in the last 6 to 8 months, so it will not be possible to determine the changes resulting from this project within the scope of the study.

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More information

For more information about this project, visit:
www.bergriver.co.za, www.africaadapt.net

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We are looking for research articles, community case studies, videos, audio clips and photo essays about climate change adaptation in Africa. If you would like to contribute, please contact Esther Lung'ahi at the ALIN address **below**. We welcome contributions in French and English.

Join the debate online

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