



Nature's voice

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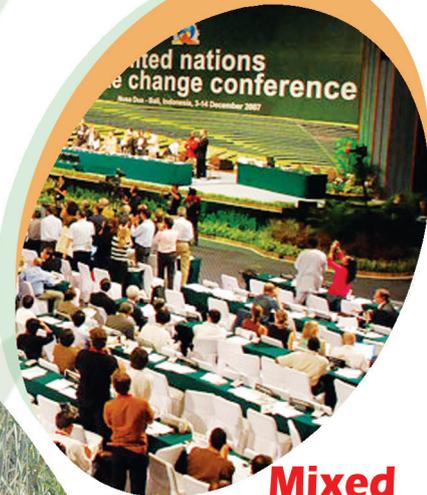
**El Nino, Agriculture
and Climate
Change**



**Participatory Fisheries
Management**



**Worldwide
Views on
Global Warming**



**Mixed
Expectations
on the Future
Climate
Regime**



**The Wildlife and Human
Conflict in Mangochi**

About **CEPA**

Centre for Environmental Policy and Advocacy (CEPA) is a not for profit public interest non-governmental organization registered as a company limited by guarantee in 2002.

As a think tank, CEPA provides advice and conducts research in environment and natural resource management policies and legislation with a view to designing appropriate interventions for promoting sustainable environment and natural resources management.

Our work concentrates on sound environmental governance; in this respect, issues of accountability, institutional strengthening and representation are at the core of our activities.

Our Vision

An equitable and just society that values sustainable environment and natural resources management.

Our Mission Statement

To be a think tank for ideas and action oriented research institution of first choice to promote sustainable environment and natural resources management in Malawi and Southern Africa.

Our Goal

To facilitate policy formulation and implementation for sustainable environment and natural resources management.

Programmes and Projects

CEPA is currently implementing a number of projects and these include: -

Enhancing Capacity for Sustainable Environment and Natural Resources Management Policy Making and Implementation

The overall goal of the project is to achieve sustainable development through sound management of the environment and natural resources. The project is intended to enhance the institutional capacity of CEPA in facilitating formulation, analysis, monitoring and implementation of environment and natural resources management policies.

Policy and Practice Around Disaster Risk Reduction and Climate Change Adaptation in Malawi

The project is being implemented within the framework agreement between CEPA and Action Aid International Malawi. Its objective is to influence policy and practice around disaster risk reduction and climate change adaptation in Malawi.

The Access Initiative (TAI)

TAI seeks to enhance implementation of Principle 10 of the 1992 Rio Declaration, to which the state parties re-committed themselves in Johannesburg in 2002 at the World Summit on Sustainable Development. Under this initiative, CEPA is currently work-

ing in enhancing access to environmental information and justice in matters relating to the environment by facilitating enactment of the revised Environment Management Bill and the Access to Information Bill.

Enhancing Capacity for Engagement in Constituency Environmental Management and Natural Resources Advocacy

The project is being implemented by CEPA and its partners namely WESM, CCJP, Mothercare and FOCUS, Legislators and communities in pilot constituencies. This initiative aims at enhancing the capacity of the partners in ensuring that Government of Malawi and donor policies and programmes in ENRM become increasingly responsive to the needs of rural communities with the long term objective of socio-economic development.

Southern Africa Biodiversity Policy Initiative (SABPI)

The main mandate of the initiative is to implement complimentary activities pertaining to national policy on biodiversity, biotechnology, food security, international trade and intellectual property rights including the linkages between and among these.

The Land and Agrarian Reform Initiative

The project seeks to influence land and agrarian reform in Malawi to address several existing imbalances in land ownership, advocate for pro-poor land policies, appropriate institutional frameworks to support people centred land and agrarian reform and share best practices on land and agrarian reform with other countries in Southern Africa.

Publications

CEPA produces Nature's Voice, a newsletter which contains policy related issues in climate change, biodiversity, environment and natural resources management. CEPA also publishes a wide range of reports, policy briefs and other publications on the work it implements and electronic copies of these are available on its website.

Resources

CEPA maintains a resource centre of journals, books, newsletters and related materials which is constantly updated. These materials can be accessed by the public at CEPA premises at any time.

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Editorial

Our Greatest Calling

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These are tough years for the world. The global economy is nose-diving. Recovery is taking longer than we all would like. Rains are becoming unreliable. Irrigation is not catering for as many people as we want. More and more people, according to FAO, are going hungry than before.

For Malawi, the picture is a bit different, yet we have our challenges. The economy is growing. We have enough food for most people, in any case, anywhere, all people cannot have food all the time.

But this is not all. We are faced with real environmental challenges that are impacting on food and health-our life, in short. As I wrote this piece, I was on malaria treatment and had just realized that Blantyre, like almost all four cities of the country, have mosquitoes all year round. This is an environmental issue.

Still, as I wrote this piece, leaders of the Commonwealth were meeting in Trinidad and Tobago where climate change was high on the agenda.

Environment is the main story of our time. We can talk about HIV and AIDS, food security and economics. But at the core of all these is the environment-our place, our world, our earth and the skies above us.

This is the reason Centre for Environmental Policy and Advocacy still commits part of its scarce resources to this newsletter, Nature's Voice. We are speaking for nature whose sound has been missed by all of us for so long.

Nature is silent, often. Nature is powerless often. Yet nature can be disastrous as was the case in Phalombe about two decades ago.

We have taken speaking for nature as a noble task. It is proper, therefore, that you go through the articles carefully, thinking through every word, every sentence and every thought. And it would be nice to have your feedback, even your articles for the next edition if you feel like being one of those to speak for nature.

For now, let us remember that we do not inherit the earth from our parents, but we borrow it from our children. So, let us return to our children and their children a better earth than we found it.

This is the greatest calling of our time.

Contents

El-Nino, Agriculture and Climate Change Adaptation
— Page 4



No Time for "Business As Usual" at Copenhagen Climate Talks
— Page 10



The Wildlife and Human Conflict in Mangochi
— Page 12



Deforestation in Malawi: Understanding the Nature of the Problem
— Page 14



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El Nino, Agriculture and Climate Change



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El Nino refers to the occasional emergence of warm sea-surface water in the central and eastern equatorial Pacific Ocean, an area that normally has relatively cool water. It can recur at any time, usually between two to seven years (four and a half years on average), and can last up to 12 to 18 months.

Late in 1982, most governments around the world were abruptly made aware of this natural process – a process that had been occurring in the tropical Pacific Ocean unnoticed for thousands of years. The very strong 1982-1983 El Nino served as a wake-up call at that time to scientists and governments. It was the biggest El Nino event in at least a hundred years, and its negative impact provided scientists with convincing arguments to their governments about why research to improve their understanding of the phenomenon would be of great social and economic benefit to societies around the world. Fifteen years later, in 1997-1998, another very strong El Nino developed which scientists labeled the 'El Nino of the Century'. The overall damage it caused was estimated at US\$96 billion, five times the cost associated with the 1982-1983 events.

What El Nino is

The warming of the water along the west coast of South America was first named El Nino in the late 1800s by Peruvian fishermen (it means 'Christ Child' in Spanish) because every year beginning around December, the water along the Peruvian coast would warm up, lasting only a few months.

The term El Nino has been broadened by many people to represent all sea-surface warming, weak and strong, in the equatorial Pacific. Some scientists prefer to call El Nino by other names, such as 'warm event' or 'warm episode'.

El Nino is also associated with changes in sea-level and pressure at locations across the Pacific basin between Darwin (Australia) and Tahiti. In the 1920s a British researcher, Gilbert Walker, identified a see-saw like pressure pattern: when sea-level pressure is high near Tahiti, it is low at Darwin, and vice versa. He called this process the Southern Oscillation. These two processes – one in the ocean, El Nino – and one in the atmosphere, the Southern Oscillation – interact to form what is called El- Nino/Southern Oscillation (ENSO). Although some scientists like to refer to the sea-surface warming in the equatorial Pacific as ENSO, most people still refer to these air-sea interactions as El Nino.

Implications of El Nino to Agriculture in Malawi and other Countries

El Nino is known to occur with varying degrees of intensity and duration. It is one of the causes of climate variability especially over Southern Africa and is often associated with significant changes in precipitation in several parts of the globe. Over some parts, El Nino brings heavy rainfall resulting into floods while in others, it causes drought. For example, El Nino in Southern Africa is associated with drought while in East African countries such as Kenya, Uganda and Tanzania, it is associated with heavy rainfall.



El Nino in Southern Africa causes drought thereby worsening the impacts of climate change

It is important to note that not all droughts in Southern Africa are caused by El Nino.

El Nino may affect agriculture and water resources either positively or negatively depending on the geographical location and its intensity. However, in Malawi the phenomenon has been known to negatively affect agricultural production. One notable El Nino is that which caused the 1991/1992 drought and reduced agricultural production by 25% and a 10% reduction in Gross Domestic Product (GDP).

Another, is the one that caused the widespread flooding of 2000/2001 and led to a decline in maize and tobacco productions by 30% and 16% respectively. This means that the impact of the phenomenon is enormous to Malawi since the country's economy heavily depends on rain fed agriculture.

Implications of Climate Change to Agriculture

Climate change is attributed directly or indirectly to human activity that alters the composition of the atmospheric gases. Climate change is altering temperature and rainfall regimes. These changes are causing shifts in rainfall patterns and increased incidences of pests and diseases. Some studies have shown that with climate change, crop production per hectare will decline, cropping patterns will change, the length of growing seasons will shorten and that the onset of rains is expected to delay hence affecting planting dates.

Africa is anticipated to be more vulnerable to such a change. The climate on the continent is already adverse with frequent droughts, high levels of poverty, rapid population growth, slow technological growth and higher dependence of domestic economies on agriculture. The recent report of the Intergovernmental Panel on Climate Change (IPCC) indicates that food crops in Africa such as wheat, maize and potatoes are likely to drop in yields and rice may disappear completely due to shortage of water and heat stress during some growth stages.

It is known that in the arid and semi arid regions of Africa, climate change will have most profound impacts on agricultural production.

However the extent of such impacts will vary from region to region where some areas are expected to benefit while others are expected to worsen. For example, studies have shown that an annual temperature increase of 1.0 °C by 2050 over some dry parts of Africa is likely to increase precipitation and this will benefit agricultural production since water is currently a limiting factor while the same temperature increase over drier areas may lower water availability, thereby worsening the current situation.

Another example based on some scientific works is that with temperature rise. Maize



Irrigation is a way of adapting to both climate change and the drought effect of El Nino

production is generally expected to decrease significantly in most parts of Southern Africa but over most highlands of East Africa the production is expected to increase due to larger areas becoming suitable for farming.

In general, over Southern Africa, increased temperatures and changes in precipitation will destabilize agricultural production resulting into food insecurity and economic instability.

The impacts of climate change have already been felt in Malawi with increasing occurrence of droughts and floods particularly as from 1990. These extreme events affect agricultural production.

Climate change impacts on cropping patterns is evidenced in Malawi where for instance, tobacco in some areas of the country used to be transplanted during early November, but currently it is being transplanted in December.

Some studies for have also shown that with climate change, crop production per hectare will decline. For example by the year 2040, maize yield is expected to decrease by a minimum of 10%.

Ways of Adapting to El Nino and Climate Change in Agriculture

With climate change, including periodical occurrences of El Nino, Malawi is at high risk of declining economic growth and this will affect the livelihoods of its large rural population. Some experts have suggested that by the year 2100, climate change will reduce about 40% of agricultural contribution to GDP with limited adaptation or by 2% with implementation of climate adaptation measures.

Conservation Agriculture

A Key to Sustainable Land and Water Resources Management

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Conservation agriculture is defined as a concept and practice for 'resource saving agricultural crop production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment. It is based on enhancing natural biological processes above and below the ground. operations such as soil tillage are reduced to an absolute minimum, and the use of external inputs for instance agrochemicals and nutrients of mineral or organic nature are applied at an optimum level and in a way and quantity that does not interfere with, or disrupt biological processes.

Conservation agriculture is a form of sustainable land management and it operates on the following three principles:

- Minimum soil disturbance which is largely related to tillage, weeding and harvesting;
- Maximum soil cover, preferably continuous throughout the year; and
- Crop rotation and associations

Conservation agriculture aims to produce high crop yields while reducing production costs, maintaining soil fertility and conserving water. It is a way to achieve sustainable agriculture and improve livelihoods and is also in line with the Malawi Growth and Development Strategy (MGDS).

It does not come as a surprise therefore that the Ministry of Agriculture and Food Security (MoAFS) has adopted conservation agriculture as one of the means to achieve sustainable land management for increased productivity. In addition, the MoAFS has placed very high consideration on sustainable land and water management as highlighted in the priority areas of investment in the Agricultural Sector Wide Approach Programme (ASWAP). One of the strategies in the programme that is directly linked to conservation agriculture is to promote sustainable management of natural

resources by reducing land degradation through a range of better land husbandry practices, offering farmers tangible economic and environmental returns and using community – based participatory approaches.

Other strategies in the ASWAP include;

- Protecting vulnerable areas such as dambos and river banks;
- Rehabilitating old and developing new small to medium scale conservation agriculture irrigation schemes for high value commodities and involve water users in sustainable water management and irrigation technologies;
- Promoting watershed protection mainly by community based afforestation including fruit tree planting and land resource management; and
- Promoting small scale conservation rainwater harvesting and storage systems, including dams especially for year round gardening purposes and livestock rearing.

Why Conservation Agriculture Now?

Conservation agriculture is not a new concept in Malawi. However, there is need to deliberately increase the awareness and build conservation capacity amongst farmers of the basic principles under conservation agriculture. The technologies which are promoted are mostly the ones the Land Resources Conservation Department is already promoting like contour ridging, crop residue incorporation, intercropping and compost manure application, however, the focus under conservation agriculture has been to promote minimum tillage, crop residue management, permanent pit planting, cover crops, intercrops and crop rotations and associations.

Through the implementation of its programmes, MoAFS through the Land Resources Conservation Department (LRCD), has mounted demonstrations on the various technologies under conservation farming in all the Agricultural Development Divisions (ADDs). To date, over 20,000 hectares have been put under the various technologies of conservation farming. MoAFS is not alone as other non-governmental organisation partners are also promoting conservation agriculture. These include Total Land Care (TLC) and Food and Agriculture Organisation (FAO).

The outreach to farmers has been facilitated mainly through the following where conservation agriculture is practised; model



Conservation agriculture is a measure of both mitigating and adapting to climate change

villages which are areas where facets of agricultural development and farm conservation are practised for demonstration to farmers, who may later practice what was taught to them on their own farms; greenbelts, which are stretches of well managed land where a variety of crops are grown, aimed at maximizing food, nutrition and income security; and clusters where farmers are grouped together to consolidate their produce to deliver in bulk, to large markets.

The main activities have been demonstrations, field days, follow-ups and training of farmers on conservation agriculture jointly done with the NGO partners. The existing programmes implemented under the LRCD for example Natural Resources Management and Environmental Support Programme (NATURE), Farm Income Diversification Programme (FIDP) and Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) have also acted as entry points for demonstration of the benefits of the technologies under conservation agriculture.

Benefits of Conservation Agriculture to Communities

Conservation agriculture offers a number of benefits which help farmers to achieve food security. These include;

- Moisture retention in the soil;
- Reduced soil and soil nutrient loss through run-off;
- Improves soil structure and fertility;
- Eventual decrease in weeds;
- Greater farm profitability and food security;
- Reliable yields in dry years;
- Reduced labour, animal traction or fuel costs; and
- Increases area cultivated as less time is needed per hectare.

Benefits of Conservation Agriculture to the Country

One of the major benefits of conservation agriculture to our country is being an option for adaptation to the impacts of climate change as well as being a way of mitigating it. Adaptation from conservation agriculture

is achieved through the improved land management *practices*. Conservation agriculture also offers mitigation options as it is a carbon sequestration method and stores carbon in crop residues and soil.

Challenges to Implementing Conservation Agriculture Methods

The main challenge to implementation of conservation agriculture has been the inadequate capacity amongst staff members which led to insufficient packaging of the conservation agriculture technologies for inclusion into the green belts and clusters. In addition, a number of major constraints and challenges impacting on the implementation of conservation agriculture are:

- Resource limitations;
- Problems relating to conflict of use of crop residues in the fields versus use as livestock feeds;
- Equating conservation agriculture to use of herbicides and other improved inputs; and
- Dependency on provision of inputs for adoption of conservation agriculture.

The Way Forward

One of the priority issues which Malawi should undertake regarding conservation agriculture is to ensure that there is a proper policy regarding conservation agriculture in the country. The LRCD is well placed to ensure that this is done and accomplished. Already, the LRCD has a draft strategy for implementing conservation agriculture which will need to be disseminated once finalized. The current National Land Resource Management Policy and Strategy should also be reviewed to incorporate and articulate issues on conservation agriculture.

The other priority area is capacity building in conservation agriculture among implementers of the activities relating to sustainable land and water management.

For sustainability, availability and accessibility of conservation agriculture inputs and implements need to be improved as well as research, extension and farmer linkages on conservation agriculture.

CoP 15 Mixed Expectations on the Future Climate Regime

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The 15th session of the Conference of the Parties (CoP 15) of the United Nations Framework Convention on Climate Change (UNFCCC) will be held in Copenhagen, Denmark from 7-18 December 2009. The conference was expected to attract up to 15, 000 delegates including heads of state and government. The CoP is the supreme body that monitors the implementation of the Convention. It meets once every year unless requested otherwise by a party. The UNFCCC was adopted in 1992 in New York by over 189 member states. Its objective is to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

During the 13th session of the CoP held in Bali, Indonesia in December 2007, parties agreed to shape an ambitious and effective international response to climate change. The Bali Action Plan centred on four "building blocks" of a future climate regime, as identified by the dialogue on long-term cooperative action namely:- mitigation; adaptation; technology development and transfer; and finance. The conference culminated in the adoption of the Bali Roadmap, which charts the course for a new negotiating process.

The 15th conference in Copenhagen was expected to reach an agreement on how to proceed up to, and beyond 2012 when the first commitment period of the Kyoto Protocol expires. The conference seeks to reach an agreement on new targets for reductions of greenhouse gases emissions by

industrialized countries for the second and subsequent commitment periods. Developing countries are also expected to contribute to global efforts through implementation of nationally appropriate mitigation actions (NAMAs) on a voluntary basis and these will have to be fully funded from the global climate adaptation fund. According to the 4th Assessment report of the Intergovernmental Panel on Climate Change (IPCC, 2007), developed countries (Annex I countries under the Convention) need to commit to an emissions cut of at least 25 to 40% below 1990 levels by 2020 and 85 to 90% by 2050 to keep global warming well below 2 °C. This is why 2009 is a crucial year in the international efforts to address climate change as it will also determine ambitious emissions reduction targets for developed countries in the post 2012 Kyoto Protocol. It is critical that parties agree on a fair and safe deal, to help avoid the uncontrollable impacts of climate change and to manage the unavoidable impacts of climate change that countries are already experiencing. Climate change is having a direct impact on our countries and if not managed, will make it harder to achieve the Millennium Development Goals. (MDGs). A team of experts drawn from government, civil society, academia and the private sector will represent Malawi at this important event.

Key Issues for the 15th Session of the Conference of the Parties

Among the most critical issues that developing countries are demanding to be discussed is the amendment of the Kyoto Protocol. The Protocol's first commitment period expires in 2012. Parties have to renew their commitments for the second and subsequent commitment periods. The suggestion is for the Kyoto Protocol to be amended and not replaced completely, as some Annex 1 Parties such as the United States are proposing.

Another demand is that developed countries should reduce their greenhouse gas emissions by at least 45% below 1990 levels by 2020 and at least 95% below 1990 levels by 2050 in order to ensure GHG concentration and aerosol below 350 ppm CO₂ equivalent temperature rise below 2°C.

Parties envisage to ensure a fair, inclusive,



Developing countries hoping for a fair deal from the Copenhagen climate talks

effective and equitable deal in Copenhagen that will benefit the climate and take into account the vulnerable countries as they strive for poverty reduction, sustainable development, achieving the MDGs and gender equity.

Some Points of Divergence

The countdown to the Copenhagen Conference has been marred with tension and mixed expectations following the perceived stand taken by the majority of developed countries, which developing countries feared would negatively affect the main building blocks of the future climate regime.

The points of divergence included developed countries promising only up to 7 – 14% cuts in emissions – this is far below the science recommendations.

Developed nations are also not committing themselves much on the level of finance for climate change adaptation, mitigation, technology transfer and capacity building.

Some Annex 1 Parties including the United States and the European Union want to “kill” the Kyoto Protocol and replace it completely with a new agreement. This is against Article 3 paragraph 9 of the Protocol which calls for a review.

What is at Stake for Developing Countries?

If not well addressed, climate change will make it harder for countries to achieve the MDGs, and the objectives of national development strategies such as the Malawi Growth and Development Strategy (MGDS)

in the case of Malawi.

The IPCC findings indicate that if the atmosphere is not stabilized by the year 2050, devastating effects will be hard to bear especially for the developing countries. Findings indicate that Africa shall be the most devastated continent with sub Sahara being the worst hit.

It is critical therefore that Parties agree on a fair and safe deal in Copenhagen, to avoid the unmanageable impacts of climate change and to manage the unavoidable impacts that communities are already experiencing.

National Preparations

Malawi was represented in the preparatory meetings in Bonn, Bangkok and Barcelona on the road to Copenhagen.

Through stakeholders consultations, the country prepared a position paper to guide the negotiating team. The positions were presented at the negotiating groups including the Least Developed Countries and the African Groups. Malawi held meetings of the principal secretary's steering committee on climate change and the technical committee whose composition are all relevant government Ministries, civil society and development partners.

Side events and Exhibitions

While at the COP 15, Malawi intends to exhibit its success stories in agriculture and food security through the fertilizer subsidy programme; some case studies from the civil society; crop insurance schemes; and the carbon sequestration programme.



No Time for 'Business as Usual' at Copenhagen Climate Talks

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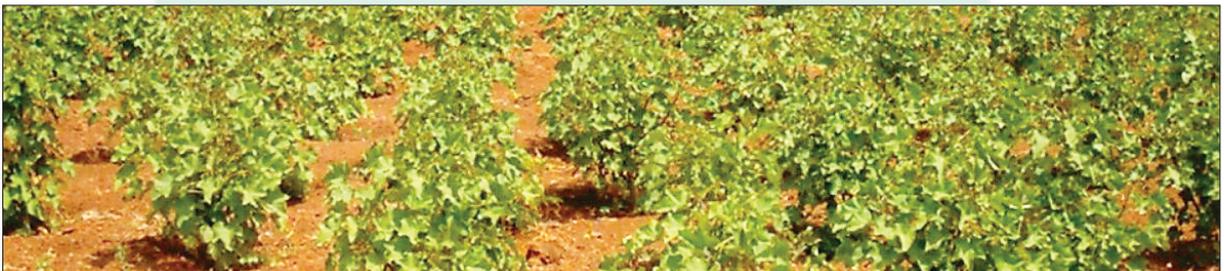
In its most recent report on the *State of Food Insecurity in the World 2009: Economic Crises Impacts and Lessons Learned* the United Nations Food and Agriculture Organization (FAO) estimates that 1.02 billion people are undernourished worldwide. According to FAO there are now more hungry people than at any other time since 1970. The increase in the number of hungry people was already rising even before the global economic crisis which has exacerbated food insecurity.

According to FAO, increasing food insecurity is not a result of poor harvest, rather of high domestic prices, lower incomes and increasing unemployment. Climate change has added new anxieties as it affects both food and energy security. It is a problem not only for poor developing countries who are faced with increasing vulnerability for the majority of their citizens who depend on agriculture and natural resources. Both developed and developing countries must also confront the prospect of rising sea levels, depletion of water sources, heat waves and melting glaciers and acidification of coral reefs.

On the other hand, measures to mitigate global warming strike at the very heart of the global energy system on which the western capitalist architecture has been built. Reducing greenhouse gases that contribute to global warming entails cutting down on energy consumption. This would affect transportation systems considerably as the search for clean energy systems will have impacts on prices and

affect numerous commodity prices. Employment will be affected as polluting industries may have to downsize or close down. Many developed countries are therefore not keen to take unpalatable decisions that would adversely affect the incomes and welfare of their citizens, even in the short term. On the other hand, having largely caused the current global warming from historical emissions, developed countries are unwilling to concede that they must pay for the pollution that caused global warming to enable vulnerable developing countries cope with the effects of climate change. Clearly, developed countries are concerned with huge financial burdens which this responsibility entails.

The solutions to global warming advocated by the west are therefore premised on business as usual. They include carbon trading which enables industries continue to pollute and pay developing countries to undertake clean development projects as offsets. Many commentators have argued that carbon trading will hardly reduce global emissions considering that polluting industries will continue to pollute. Developed countries are also promoting the use of biomass to produce biofuels to reduce dependence on fossil fuels under the pretext that these biofuels do not emit greenhouse gases. Again, it is not certain that agrofuels emit less carbon; what is certain however is that agrofuels production will increase the rate of deforestation as more land will be opened up for agrofuel crops. In addition, agrofuels will compete with food security and lead to a scramble for land and resources for feeding the expanding populations. The proponents of agrofuels on the other hand argue that the crops will be grown on marginal land; yet much of this so called 'marginal land' belongs to the communal pool responsible for providing various community services including timber and wildlife resources as well as numerous



Jatropha seeds can be used to produce biodiesel; such practices are being promoted by developed countries as mitigation to climate change but can bring challenges to the developing world

ecosystem services (H Paul et al, 2009).

Agriculture has therefore been specifically targeted for negotiation in the upcoming climate talks in Copenhagen. The proposals focus on promoting practices that are perceived to enhance carbon sequestration such as through 'no-till' or the application of charcoal into the soil to absorb carbon dioxide. Biotechnology is also being promoted to provide solutions not only through the so called 'climate ready' crops but also development of new technologies to improve the production of biofuels and agricultural practices that promote carbon sequestration. A large number of patents of these climate ready crops have been filed in Europe and America; yet there is none on the market and their viability is not demonstrable yet. The focus on techno-fixes suggests the behind the scenes lobbying by western multinational corporations who see profits in this climate calamity (H Paul et al, 2009, *supra* African Centre for Biosafety, 2009).

Malawi's population entirely depends on agriculture with over 85% of the people employed in the sector and providing almost 40% of the GDP. Almost the entire agriculture system is dependent on rainfall which in recent years has proved erratic, especially the 2000 to 2004 growing seasons, when rains failed or were inadequate in certain parts of the country and caused mass starvation after crop failure.

In recent times, Malawi has achieved food security through the subsidization of agricultural inputs especially fertilizers and seed; the rains have also generally been good. The subsidy programme primarily targets poor small scale farmers to enable them grow the country's staple food, maize. Concerns have been raised that the programme may not be sustainable in the long term considering its cost and the promotion of monoculture which may not work during disasters including droughts and floods. Hence the National Adaptation Programme of Action (NAPA) proposes diversification of the agricultural system to ensure that small scale farmers can adapt to the impacts of climate change. Unfortunately funding for these programmes have received very limited support from donor countries who as highlighted above, are more interested in mitigation measures such as carbon trading that preserves the *status quo* and guarantee incomes for western consultancy firms managing complex carbon trading schemes.

Developing countries such as Malawi therefore stand to lose the most from the 'business as usual' approach which the west is advocating. They have vulnerable economies that are less capable of withstanding the impacts of climate change or indeed rising energy and food prices. They also have very limited access to technologies which may be used to mitigate climate change or enable them adapt to its impacts. On the other hand, the multiplicity of issues developing countries are required to address or respond to do not



A rich agricultural biodiversity enhances food security and builds resilience to climate change

match their respective technical and political capacity needed to coordinate and manage these. Unless a coherent policy is developed and implemented, developing countries can easily fall into the trap of promoting the business as usual approach which will not address their specific national interests.

The news from various climate change negotiations conferences so far including the most recent ones held in Bangkok, London and Barcelona do not provide much room for optimism. Developed countries are keen to overhaul the Kyoto Protocol that provides some legally binding commitments for developed countries but which were never complied with. The focus of developed countries is to get the new polluters such as India, China and Brazil to agree to binding commitments; while the latter rightly object on the grounds that the common but differentiated responsibilities under Kyoto require that developed countries undertake emission cuts; they also highlight that the new polluters should be allowed to emit to enable their economies to sufficiently develop. Poor developing countries such as Malawi are caught in the middle of these fights. Clearly, for Malawi and other similar developing countries, the primary objective should be to mobilize resources to implement the NAPA to enable their economies cope with the impacts of climate change. They must focus on developing capacities that increase the resilience of their economies, including biodiversity conservation and developing local capacity for enhancing food security.

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The Wildlife and Human Conflict in Mangochi

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Wildlife-human conflict is a big challenge in wildlife conservation in Malawi, more especially where people settle and cultivate close to protected areas. This is exacerbated by high human population which exerts pressure on the protected areas when looking for resources such as game meat, firewood, water and thatch grass.

Importance of Wildlife to the Country

Wildlife is very important to the country in the sense that it attracts tourists, both local and international, who bring money for the development of the country and also promotes scientific research. Furthermore, wildlife are a key component in protected areas which are biodiversity banks that include traditional medicinal plants, are water catchment areas, reduce siltation in water bodies and prevent flooding.

Importance of Wildlife to Communities

Protected areas and the wildlife therein offer employment to local communities through government departments, private sector and non-governmental organizations mandated to manage and conserve biodiversity in Malawi. In some cases, tour



A woman stands by her home that was damaged by elephants from a park



An elephant killed by poachers; is it really the conflict or for the ivory?

operators offer employment opportunities to community members as guides while the tourists may buy artefacts from them and this contributes to local incomes. In many cases tourists are also interested in learning about the culture of local communities and thus enable the communities to showcase their culture.

Illustration of a Typical Case of the Wildlife-Human Conflict in Malawi

Conflict between humans and wildlife occurs where they share the same environment and human settlements and cultivated land are close to protected areas and communal forest land. An illustration of this is the famous case of Phirilongwe elephants in Mangochi where the human influx into an elephant habitat resulted in continual competition for agricultural land versus grazing.

During the conflict, 16 people were killed and two injured by the elephants in a space of five years. Around 11,600 and 2,100 farming families in Nansenga and Mbwadzulu Extension Planning Areas respectively were affected as the elephants damaged their crops. In retaliation by the communities, seven elephants were poached for ivory within the forest.

Results of the conflict necessitated the evacuation of elephants. In June 2009, the Department of National Parks and Wildlife trans-located 83 elephants from the areas of TA Mponda and Nankumba. During elephant capture for relocation exercise, it was noticed that several of them had amputated tusks, snared legs and bullet wounds and this reflected the attempts by poachers to kill the animals.



The magnificent hippopotamus; is it a friend or the enemy?

Challenges

One of the challenges to addressing the problem of human-wildlife conflict is by conducting awareness programmes. This activity is very costly. Even where they are done, it is often difficult to measure the levels of attitude and behaviour change towards wildlife among communities. Another challenge pertains to a solar-powered fence. This approach is also very expensive and where it was tried, local communities usually thought that it was merely a barrier preventing their access to the protected areas and ended up vandalizing it and the cables were even used to snare the animals.

Finally, it may further be said that the management of the elephants in Phirilongwe forest was partly a challenge due to land tenure issues. The elephants inhabited communal land where the Department of National Parks and Wildlife had no influence.

Suggested Solutions to the Conflict

The following are some of the recommended solutions that can be implemented to address the problem of human-wildlife conflict.

- Creating buffer zones around protected areas where animals can concentrate looking for food instead of foraging into farmland;
- People should settle and cultivate away from protected area boundaries;
- People should grow crops that are unpalatable to wild animals within the proximity of protected area boundaries;
- Construct solar powered electric fences around protected areas;
- Trans-locate animals from high density areas to low density areas; and
- Develop and implement awareness programmes to the general public on the importance of wildlife conservation and how the human-wildlife problem can be avoided.

El Nino, Climate Change and Agriculture

From page 5

This implies that the impact of climate change and extreme weather events caused by El Nino or other factors could be minimized at community, national, regional or global levels with the adoption of appropriate adaptation strategies. These strategies are aimed at adjusting natural or human systems in response to actual or expected climatic stimuli or their effects. Some of the strategies include;

- Developing and improving early warning systems which may involve monitoring and forecasting climatic/weather events such as floods and droughts;
- Proper use of weather/climate information in order to reduce the impact of climate change or extreme weather events on agricultural production;
- Promoting crop and animal diversification which should include drought resistant

crops, fast maturing crop varieties and animal rearing as means of income diversification;

- Cultivation of crops based on favourable agroclimatic conditions (location specific crops);
- Proper irrigation methods that are well scheduled;
- Measures for conserving soil moisture such as mulching or use of organic manure; and
- Promoting research that could assist in enhancing climate change risk reduction.

For climate change adaption measures to work effectively for Malawi, there is need to have overall policy regarding climate change adaptation. A wide array of adaptation options is available, but more extensive implementation of adaptation measures than is currently occurring is needed to reduce vulnerability to climate change in future.

Deforestation in Malawi

Understanding the Nature of the Problem

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Deforestation is a major problem in Malawi and a key factor to recent power disruptions being experienced by the Electricity Supply Corporation of Malawi (ESCOM) over the years. As a result of deforestation, there is a heavy sediment load in the Shire River which causes damage to pipes in the Nkula and Tedzani turbines, and the siltation that follows reduces the intake capacity of water for the dam. The heavy sediment load in the Shire originates from the extensive deforestation that is occurring throughout Malawi particularly in the middle Shire catchment. This article will explore the links between deforestation in the upstream catchments of the Shire and power disruption at ESCOM.

13 Million People Still Relying on Wood Energy

The extensive deforestation throughout Malawi is a result of a number of interlinked factors. One of these factors is the rapid population growth in Malawi. The influx in the 1980s of 1.2 million Mozambican refugees into the country during their civil war worsened the problem of deforestation.

Although rapid population growth should not necessarily result in deforestation, the country has a unique set of problems in choice of energy sources. Wood (charcoal and firewood) is the number one source of energy for over 90% of the population principally for cooking and heating. In the country's case thus, high population means more trees being cut.

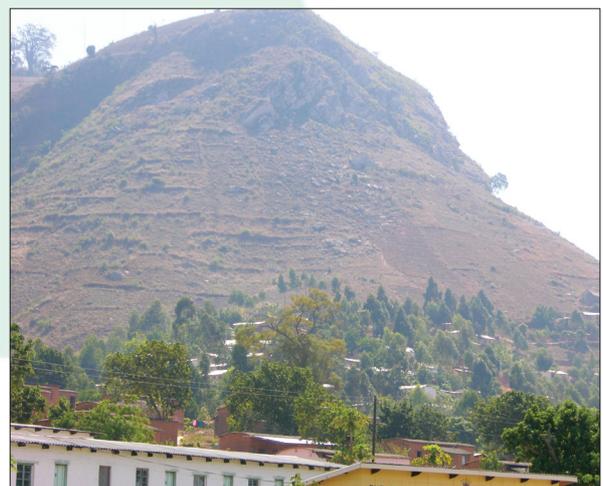
Another dimension of the problem is the dire poverty of the majority of Malawians which limits the number of economically viable energy alternatives available to them. They can not afford to use fossil fuels and most definitely can not meet the expense of ESCOM power. I argue that very few Malawian graduates can afford to use a geyser in their homes for every day of the year. It is because they still find it more affordable to use charcoal and firewood even though of late, the prices of these have also gone up due to limited

supply and high demand. This has resulted in ESCOM power to somewhat compete with wood energy.

Not only does an increase in population result in more trees being cut for fuel purposes, but it also leads to forest clearing in order to create more land for cultivation and settlements. Due to the lack of land most farmers continue to clear marginal areas and steep slopes officially classified as not suitable for cultivation and this is leading to more deforestation and soil erosion. Efforts to have the run-away population under control have been dismal at best. Despite the positive efforts by the Malawi Government and Banja la M'tsogolo in birth control, less than 28 % of the population are using the available techniques on a continuous basis and the population of Malawi is now 13.1 million and growing.

The Tobacco Industry Needs Wood Too

The tobacco industry represents the largest foreign exchange earner for Malawi. Expansion of the estates in the 1970s and 80s led to yet more land being cleared for estates resulting in further deforestation. Worse still, the tobacco industry annually uses indigenous wood from community forests for barn construction poles, rafters (burley tobacco) and for curing (flue and dark-fired tobacco). The tobacco industry may deny this but the facts are that the tobacco industry continues to contribute to deforestation. I have yet to see new research figures to show otherwise. What can be disputed perhaps is the exact contribution of the tobacco industry to deforestation which is estimated at 20 % of the total deforestation.



The heavily deforested Ndirande Mountain

Efforts to have the tobacco industry rely on its own wood resources have not been a success. The lease hold regulations say that estates should afforest 10 % of their land- but very few tobacco estates, if any at all, have met this legal requirement and in any case, regulation is hardly enforced. Even more, efforts to have the industry rely on alternative energy like coal have not been widely adopted. I am only aware of Press Agriculture as having made serious efforts to afforest or move to alternative fuels like coal. To the best of my knowledge, ESCOM has not made a serious effort to entice the tobacco industry to use electricity for curing, water pumping and general farm power. This is unlike in countries like Zimbabwe where the tobacco industry is increasingly relying on electrical power.

Linkages between Deforestation and ESCOM Blackouts

There is a strong connection between deforestation in the upstream areas of the Shire River catchment and the frequency of ESCOM blackouts, lightly called 'load shedding'. As it turns out, frequent ESCOM blackouts occur both in the wet and dry seasons.

Deforestation leaves behind bare soils that are exposed to a direct raindrop impact. Consequently, more and more soil particles are detached leading to more soil erosion. These detached particles eventually make it to gullies, streams, and rivers all the way to the Shire River.

For instance, soil detached in Kasungu in the Bua River catchment can easily make it to Lake Malawi and down into the Shire River. Similarly, soil detached in the Rivi-Rivi River catchment in Balaka and Ntcheu can easily find its way into Nkula B or Tedzani as silt or sediment. This explains why our rivers all look brown and dirty during the wet season. More silt at these hydroelectricity generation plants means reduced power generation capacity because silt decreases the volume of water reaching the turbines and increases tear and wear. This is the same story at Walker's Ferry water pumping station for Blantyre Water Board (BWB). ESCOM and Blantyre Water Board have no choice but to start shedding loads as a way of proportioning the little power or water that is being generated or pumped. This is the cause of the endless blackouts and the perpetual water shortage in Blantyre during the wet season. But there is more to the story as this persists even during the dry season.

Flooding in Wet Season and Low Flows in Dry Season

Vegetation clearance and deforestation leaves the soils bare so that their structure changes and their capacity to take up water known as infiltration capacity decreases. Due to high deforestation rates, less and less rainwater is soaking into the ground to



Silt from eroded catchments makes rivers muddy

become groundwater available to streams during the dry season.

More surface runoff means rivers and streams bursting their banks resulting in flooding and more sediment loads. I contend that Lower Shire floods are primarily a result of deforestation upstream and not necessarily due to prolonged heavy rainfall.

The net effect of low infiltration rates is that even a very small storm result in a lot of surface runoff and sediment transport to the Shire causing flooding and siltation problems.

Even more worrying is the fact that Malawi is losing a lot of water during a very short period (December to April, which is the rainy season) to the Zambezi. The irony of it all is that this water lost is badly needed by many industries including ESCOM, BWB, Illovo, Southern Bottlers and Carlsberg and irrigation schemes during the rest of the dry 8 months. Unfortunately, there is simply no cheaper way of retaining this water for use during this period when water is needed most. More dams could be constructed at a cost but without checking deforestation upstream, they will be filled-up with silt in no time. Afforestation of upstream areas is the only long-term cost-effective solution.

Low Flows, Load Shedding and Water Scarcity

With less and less water entering the ground to become groundwater, streams and rivers will dry-up during the dry season or have very low flows due to low base flows. This includes the Shire River. Low flows in the river during the dry season means low power production at Nkula and Tedzani. Less power means more load shedding and thus blackouts in the dry season.

As you probably can notice, ESCOM is caught up between a rock and a hard place. They have blackouts in the wet season because of siltation problems and they have blackouts

Participatory Fisheries Management on Lake Malombe and Southern Lake Malawi

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Participatory Fisheries Management (PFM), as widely understood in Malawi, is a governance approach that entrenches participation of the user community in fish resource management. In PFM, the Department of Fisheries (DoF) and the fishing community are key partners that agree on shared roles and responsibilities and formulate the goals, objectives and strategies of a particular management regime. Of paramount importance to the process is the point that the government recognizes the rights and responsibilities of the local community to the appropriation of the resource. The local community should also have the ability to make management decisions on which resource to manage, who ought to be involved in the management, and size of the area where the resource is located. The PFM partners should develop a management agreement outlining shared roles and responsibilities between the government and the community. Among others, the key roles and responsibilities include formulation and implementation of plans and rules; imposition of sanctions on illegal fishers; capacity building; extension services and participatory monitoring and evaluation systems.

The PFM strategy involves mobilization of the fishing community into representative user groups called Beach Village Committees (BVCs) that are responsible for regulating all fishing activities on a particular beach. The Fisheries Conservation and Management Act (FCMA) of 1997, defines the BVC by referring to all people involved in fish-related activities such as fishing, processing, trading and boatbuilding. This is contrary to the initial understanding of a BVC, which was a group of 10-12 elected office bearers on a beach charged with the responsibility of managing a resource. The FCMA provides for empowerment of the BVCs in terms of enforcing regulations, including closed seasons, gear and mesh restrictions, closed areas and licensing of gears; authorizing both small-scale and commercial fishers to land on their beaches; and maintaining beach registers containing information about counts of registered fishing vessels, gears, gear owners and fish workers.

Capture Fisheries in Context

The capture fisheries sub-sector provides an economic activity and livelihood for the lakeshore-based segment of Malawi's population. The 2009 frame survey by DoF shows that nearly 60,000 households in the country are directly dependent on small-scale fishing activities. The majority of them are also engaged in fish trading and other ancillary industries such as boatbuilding and maintenance, net manufacturing and servicing of boat engines while yet others are employed in commercial fishing units.

In Mangochi District alone, fishing activities on Lake Malombe and southern Lake Malawi directly support nearly 20,000 small-scale fishers, and over 150,000 household members are involved in fishing, processing and trading activities. The catches from Lake Malombe and Southern Lake Malawi have declined by over 30 percent, from 29,000 tonnes in 1989. Of particular concern is the decline in Chambo *Oreochromis* spp. stocks. This is due to various reasons such as overfishing, the open-access nature of the fisheries, increased population growth, and weak law enforcement capacity. Fish production from the commercial sector in Southern Lake Malawi dropped by around 50 percent from 1976 catch. However, the catch estimates for 2006 and 2007 from the two lakes show a remarkable increase, reaching over 30,000 tonnes from a drop of 1,900 tonnes.

Progress

After a decade of implementing the PFM on Lake Malombe and Southern Lake Malawi, questions remain as to whether progress has been registered and whether it is justifiable to continue with the PFM arrangements, and, finally, how the initial design of the PFM fits into the decentralization framework, a governance reform that promotes transfer of administrative and political authority from the central government to the local government, introduced in 1998 as part of the government's decentralization policy. The DoF called for a stakeholders' review meeting in 2004, with the participation of the Mangochi District Assembly, two traditional chiefs from the district and a magistrate. The meeting identified laxity in law enforcement despite believing that PFM could address non-compliance problems given an opportunity. The stakeholders identified other specific issues as follows:

- With the lack of by-laws and devolved functions, there was no concrete basis for



The Malawi Chambo—famous for its deliciousness

assemblies to participate in enforcing fishing rules;

- As for the FCMA and the Fisheries Conservation and Management Rules of 2000, the meeting noted gaps, relating to, for example, closed seasons for commercial operators, restrictions of some emerging destructive gear types, closed areas, and regulation of the access to the fishery;
- The Mangochi Fisheries Management Association (MFMA), BVCs, and chiefs appeared not to be knowledgeable about their roles. This was the basis for illegal operations on some beaches;

- Weak capacity for BVCs to perform their work due to unavailability of funds and other resources, since the Fisheries Fund from which they could benefit was not yet established as stipulated in the FCMA; and
- Low penalty for violations imposed by magistrates were not sufficiently deterrent and rather which encouraged illegal fishing. As a way forward, the participants agreed that the district assembly should develop fisheries by-laws. The principle guiding the process was that a wider participation of stakeholders in decision making was necessary to ensure inclusiveness in terms of inputs from all user groups, including both small-scale and commercial operators.

A series of meetings on the by-law formulation process led to the formation of a Task Force on 19 March 2005, chaired by the magistrate. The taskforce guided the by-law development process and proposed the following areas to address fisheries management and governance:

- Introduce district fees;
- Address existing gaps in the fishing regulations, especially on closed seasons, mesh and gear restrictions, closed areas, and failure to regulate entry; and
- Clarify the roles of stakeholders like the Local Fisheries Management Authority (LFMA), chiefs, assembly, fishers and the DoF.

Deforestation in Malawi

From page 15

in the dry season because of low flows into the Lake Malawi- Shire River System.

Low flows in the Shire also mean domestic water rationing by BWB in the dry season. In essence, this translates into different seasons, same problem of water rationing. In the wet season, it is due to siltation at Walker's Ferry and in the dry season, it is due to low Shire flows. Downstream there is Illovo and the proposed 3000 hectare Lower Shire Irrigation Scheme requiring high flows in the dry season when Shire flow is in fact low. One wonders how this water will be rationed.

Consequences of Low Ground Water Levels

Throughout Malawi water is being extracted for irrigation schemes, gravity-fed systems for rural domestic supply and even supply for small towns. Low stream flows during the dry season mean that all these supply systems are in serious trouble. There would be no second crop in irrigation schemes, no water at the tap at that gravity fed system of Mulanje or reduced coverage area for the Mpira Dam in Ntcheu and no water supply for small towns. Furthermore, the UNICEF-funded shallow well programme is in trouble because the wells will dry-up. Some boreholes will also dry-up. Communities will start demanding deeper

boreholes and there will be a shift from surface water to groundwater abstraction as a more reliable way of obtaining water for domestic use. But with less and less water entering the ground, over time water tables will continue to decline. Eventually, it will be deeper boreholes trying to chase ever deepening water tables. Malawi will not be the first country to experience this. Israel, USA and even Botswana are galloping with this problem of deepening water tables.

As you can see, the problem of deforestation affects everyone. From ESCOM, BWB, industries, flooding areas, the tobacco industry, smallholder farmers, irrigation schemes, domestic water supply for towns and cities, and yourself and I through blackouts and water rationing. This is truly a national problem that needs to be tackled head-on. After all, our forefathers once said "*Zidze pano n zatonse; mfumu yatcha diwa*" (we are in it together; we either die or perish together). The deforestation chickens have finally come home to roost (well, to haunt Malawians). Nothing short of afforestation will do. We needed a Presidential Initiative on Afforestation as soon as yesterday. Amen.

In part 2 in the next issue, the author will look at ways and raw ideas to confront this seemingly unsolvable problem. Yes we can.

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Worldwide Views on Global Warming

Citizens Speak Out on Climate Change

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On Saturday, 26th September 2009, Malawi participated in the first ever Worldwide Views on Global Warming event, which took place in 39 countries across the globe. Over one hundred men and women, both young and old, representing various communities from across the country converged at the Malawi Institute of Management in Lilongwe to voice their concerns on global warming or climate change and its impact on their livelihood. Typical of the grassroots communities, the Lilongwe gathering was dominated by representatives of the farming communities with ages ranging from 18 to 70 years of age.

This, however, was not the first time that consultations on climate change policy have been made with different stakeholders in Malawi. What was missing in the previous consultations was clearly the voice of the grassroots communities, who experience the harmful effects of global warming or climate change. The main objective of the 26th September 2009 Worldwide Views on Global Warming event in Malawi and elsewhere was therefore to give the communities as rights holders the opportunity to influence global climate policy. The overarching purpose of the new approach was to set a groundbreaking precedence by demonstrating that an inclusive and all encompassing political decision making process, whether on a global scale or otherwise, is the most effective one in that it takes on board the concerns of the majority of the stakeholders.

Climate change is top on the global agenda. For instance, the United Kingdom has placed climate change at the core of its international development and cooperation

agenda. In Malawi, British Council together with the Department for International Development (DFID) and the Foreign Commonwealth Office (FCO) have developed a joint action plan on climate change. It is through this initiative that the British Council play a leading role in collaboration with the Civil Society Network on Climate Change (CISONECC), Bunda College of Agriculture, and Government departments in organising and facilitating Malawi's participation in the World Wide Views on Global Warming event.

The Event

The event was officially opened by the Deputy Minister of Natural Resources and Energy Hon. Ephraim Mganda Chiume M.P. who was also the Guest of Honour. In his speech, he reiterated the impact climate change is having on Malawi, Hon. Chiume was quoted as saying 'Climate change is a real and serious problem. Malawi, in particular, faces serious consequences as an agriculture-based economy. For many years, Malawi has been experiencing erratic rainfall. Droughts and floods have given rise to food insecurity and caused the government to appeal for food relief from our development partners almost every year. Many men, women and children depend on their farms and livestock to sustain them. With the current climate situation, it is becoming more and more apparent that small-scale farmers need to start learning different farming techniques such as irrigation in order to sustain themselves and their families.'

Also speaking during the event was Julian



Climate change is a threat to the future of children like these



Citizens that participated in the worldwide views on global warming event

Baker, the Director of British Council in Malawi, said he saw the event as a chance for the British Government to support Malawi in its efforts to implement and influence local and global climate policy.

After the preambular speeches, citizens got down to the real business of the day. In order to ensure effective deliberations, the participants were divided into smaller groups and discussions were done according to the following key thematic areas: (1) Climate change and its consequences; (2) Long-term aims and urgency of climate change; (3) Dealing with green house gas emissions; and (4) The economy of technology and adaptation to climate change. After the group discussions the participants went into the recommendations session where they formulated key messages to the United Nations Framework Convention on Climate Change (UNFCCC) 15th Conference of Parties (CoP15) negotiators.

Participants agreed that the event was important as it addressed problems they faced in their everyday lives due to climate change. "Climate change is a threat to the livelihoods of people, especially to future generations. Rainfall is now scarce, and if the pattern continues, there may be no rains at all in the future and therefore no food. Scarcity of food leads to increase in illiteracy levels as parents can no longer feed their families, therefore children marry young in an attempt to get food", said Mary Chingwaru a citizen from Nsanje which is one of the hardest hit districts by effects of climate change.

Participants also said that climate change is bringing about a lot of problems including the lack of safe drinking water, land degradation, damage to air quality and it is threatening the existence of wildlife. The community members said at the rate climate is changing they feared that future generations will lack many resources. 'What with the floods and droughts which are damaging and are occurring with increased frequency, will our children find peace?' asked Mr Thoza Lidi from Nsanje District.

Commenting on the outcome of CoP15 negotiations, citizens stressed the need for countries to come to an agreement the UNFCCC talks that will enable the world to make substantial progress in tackling the problem of climate change. The citizens also reiterated the importance for Malawi to be part of the agreement since she has also been affected and does not have the capacity to fight climate change on her own. 'CoP15 should come to an agreement as we need to act globally to resolve the problem of climate change. Developed nations must consider the impact of their actions on the livelihoods of people all over the world and must therefore consider adopting mitigation interventions. Developing nations also need to take care of their environment and reduce on cutting down trees to mitigate climate change', the citizens concluded.

Malawi's citizens' recommendations for COP15

At the end of the event, participants came up with recommendations as basis for the Malawi delegation to CoP 15 negotiations. Citizens of Malawi want the following as an outcome of the conference: -

- Strong policies should be implemented for those countries with high emissions of greenhouse gases. Developed countries must adopt new and clean technologies to reduce emissions;
- CoP15 should result in a united global agreement to slow down the rapid rate at which climate change is occurring. Developed and developing countries must speak with one voice;
- Malawians want an agreement to be reached that will compel countries to restore forests in order to reduce carbon content in the atmosphere therefore mitigating climate change;
- Institute stiff punishments to countries that emit more greenhouse gases; and
- Developed countries must lead by example by committing to substantial cuts in their greenhouse emissions and actually walk their talk.

A full report of the results and recommendations of all participating countries can be found on www.wvviews.org

