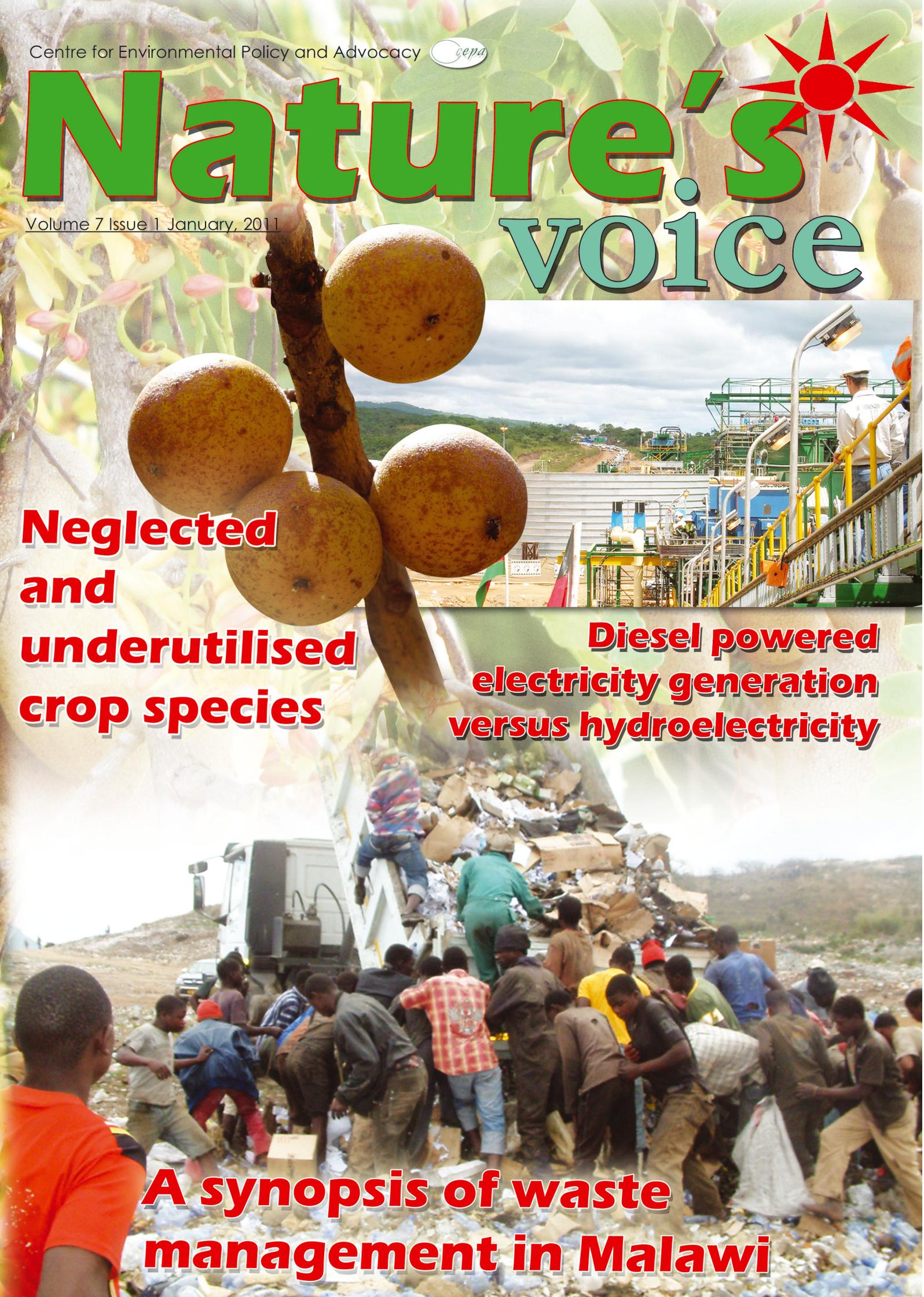


Nature's voice



Volume 7 Issue 1 January, 2011



**Neglected
and
underutilised
crop species**



**Diesel powered
electricity generation
versus hydroelectricity**



**A synopsis of waste
management in Malawi**

About CEPA

CEPA is a public interest policy think tank working on issues of sustainable environment and natural resources management. The vision of CEPA is to create an equitable and just society that adheres to and promotes sustainable environment and natural resources management.

The core business of CEPA is to facilitate policy dialogue and formulation, analysis and implementation of sustainable environment and natural resources management to increase the resilience of rural communities to adverse impacts such as climate change. This is mainly done through building partnerships with sector government departments, like-minded nongovernmental organizations and the communities together with their traditional and political leaders.

Influencing Policy and Practice in Climate Change Adaptation in Malawi - that aims to ensure that climate change policy in Malawi promotes resilience of rural poor communities. Through this initiative, CEPA is carrying out activities which are enhancing the capacity of civil society organizations in influencing policy and practice in climate change adaptation in Malawi. The specific activities revolve around: enhancing civil society lobbying and advocacy work in climate change policy debate at national, regional and international level; increasing levels of awareness and inspiring public interest in climate change management; building alliances at national level for promoting civil society engagement in climate change policy work; and developing and promoting community driven approaches to climate change policy making. This project is supported by Christian Aid.

Institutions and Governance: The Access initiative - that aims to enhance access to environmental justice by facilitating the establishment of the Environmental Appeals Tribunal (EAT). Under this project, CEPA is facilitating preparation of the necessary memorandum and instruments to appoint members of the EAT and put the EAT into operation; setting out the statutory obligations, procedures and budgets; criteria and qualifications of the Tribunal; developing procedural rules for the tribunal; developing guidelines on how the public can access the Tribunal, orienting members of the tribunal and how to process complaints from the public; and disseminate guidelines to the public on how to access the Tribunal. The project is funded by the World Resources Institute (USA).

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 (AAIM). Its objective is to influence policy and practice around disaster risk reduction and climate change adaptation in Malawi.

Enhancing the Capacity of CEPA and its Partners' Engagement in Constituency Environmental Management and Natural Resources Advocacy: Towards Enhanced Constituency Representation for Sustainable Livelihoods - that aims to contribute towards ensuring that Government of Malawi and donor policies and programmes in environment and natural resources management become increasingly responsive to the

needs of rural communities with the long term objective of sustainable socio-economic development. The main activities of this project are a) evaluation of governance in legislative representation to enhance sustainable environment and natural resources management; b) reviewing and analysing policy implementation and existing gaps in environment and natural resources management; and d) strengthening the capacity of CEPA and its partners to conduct advocacy and outreach for sustainable environment and natural resources management. The project is being funded by European Union under its Capacity Building Programme for Non state Actors in Malawi.

Southern Africa Biodiversity Policy Initiative - a sub-regional network of civil society organisations working in biodiversity, biosafety, trade, development and environmental issues in Southern Africa. Its mission is to promote, coordinate and facilitate participatory rights based approaches to policy formulation, implementation and adoption of strategies that provide for issue relating to farmers' rights, indigenous knowledge systems, community resources rights, access and benefit sharing, food security and food sovereignty. Under this initiative, CEPA is currently conducting research on the impact of agrofuels, climate change and modern biotechnology on biodiversity conservation and food security. The initiative is funded by Evangelischer Entwicklungsdienst of Germany through the Community Technology Development Trust of Zimbabwe.

Land and Agrarian Reform Initiative - that seeks to influence land and agrarian policy reform in Malawi. Under this initiative, CEPA is facilitating momentum on the enactment of the revised Land Bill in Malawi. This is being done through holding stakeholder workshops and providing capacity building sessions for key institutions working in land and agrarian reform.

Enhancing Capacity for Sustainable Environmental 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.

Land and Agrarian Reform Initiative - that seeks to influence land and agrarian policy reform in Malawi. Under this initiative, CEPA is facilitating momentum on the enactment of the revised Land Bill in Malawi. This is being done through holding stakeholder workshops and providing capacity

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, policies, newsletters and related materials which is constantly updated. These resources can be accessed by the public at CEPA premises at any time.



Editorial

Lest Nature Fights Back

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We are back. This edition once again confirms that Nature's Voice is just that: the voice of nature. And we speak for nature.

As people, we look at the financial gains we make from tobacco. But we at Nature's Voice also look at the environmental cost of growing tobacco. The aim being that we should adopt best practices for growing tobacco that can fetch good prices on the market while at the same time avoiding the environmental costs.

Which is why we take time to look at organic agriculture that has great benefits to the environment while offering us the food security we cherish so much.

There is also a story on waste management. This is a critical area that needs our attention. We tend to look at the responsibility as that of government when it is also our responsibility.

Elsewhere, we assess diesel power and hydro power. The mining of uranium in Karonga makes a good case. In the end we see that nature can do a lot of good to us but only if we do good to it as well. Nature is good, though often silent.

When we destroy the environment, nature can fight back and speak against our activities. This is happening in some ways and we at Nature's Voice want that reversed. Join us in this noble cause.

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Diesel powered electricity generation versus hydroelectricity: The case of Kayelekera Uranium Mine

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The Kayelekera Uranium Mine in Karonga, Malawi's first ever of such mines, places the country between a rock and a hard place in terms of energy resource use.

There is no question that the mine is a massive boost to Malawi's international mining image. At a glance, Malawi has joined the elite club of mining countries in the world. And the spotlight is augmented by the fact that uranium has become a metal attracting such controversial discussion because of its connection to war hardware. But Malawi is not about to start manufacturing arms.

Instead, Malawi's particular interest is the economic returns that the mine is expected to bring. According to Paladin Africa Limited, the Australian company that is extracting the uranium at Kayelekera, under the terms of the agreement, the Malawian Government will receive a 15 % free carried equity in the project.

In return, Paladin will receive what it calls 'generous tax breaks'. The company also agreed to provide social infrastructure in the Kayelekera region, in particular schools and health facilities. One of such investment has gone into a multimillion dollar water project in Karonga supplying hitherto struggling populations.

The revenue has indeed started coming into Malawi government's bank accounts. Early this year, Paladin Africa met part of its commitments and delivered the first royalty of K385 million to the Malawi Government. Minister of Natural Resources and Energy and Environment, Honourable Grain Malunga was over the moon.

"It's like getting your inaugural salary from your inaugural employment. As tobacco, the country's highest foreign currency earner is being threatened by anti-smoking

campaign, we really have nowhere to turn to other than mining," Malunga reportedly said when he received the bounty on behalf of Malawi Government.

This is the money that is very much needed by Malawi to construct hospitals, schools, roads and to invest in agriculture development.

Environment on the Shelf

But in this din of economic harvest and the resulting trickle to social infrastructure, one thing that is likely to be put on the shelf - and probably forever - is how the mine puts to test issues of environment in Malawi especially from the perspective of use of energy sources.

The mine is not running on hydroelectric energy which is considered as a clean and renewable form of energy and therefore safe for the environment. It is powered by six massive diesel generators. According to reports, the half dozen machines consume an estimated 800,000 litres of diesel fuel in one month to generate about 10 megawatts of electricity.

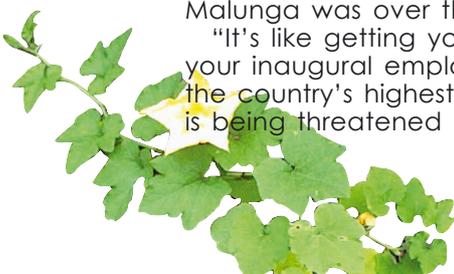
This is massive consumption to the extent that it has a bearing on the already fragile state of Malawi's foreign exchange, according to indication from the Malawi Energy Regulatory Authority (MERA). In January 2010, MERA told The Daily Times that the mine's high consumption of fuel to run the generators was a big drain on the country's foreign currency reserves.

But in a country so accustomed to black outs, thanks to ESCOM, it is not a puzzle to understand why Paladin opted for generators. ESCOM insists that it has power enough to run the mine but the electricity supplier knows that it would find it hard to convince even the barefoot individual about its capacity.

How hazardous non-renewable energy forms are to the environment is all so well documented. And that is where the problem is.

Clandestine Operations

It is not that the climatic armageddon





The Kayelekera Uranium Mine puts to test issues of the environment in Malawi especially with regard to energy generation; The mine's generators consume an estimated 800,000 litres of diesel in a month

has come to Malawi with Paladin but climate experts around the world say fuel sources such as diesel and petrol are a worrying factor in the age of climate change. Massive combustion of such fuels and the gases thereof are reported to be hazardous to climate.

It is only one company after all, occupying some little spot in the bushes of Malawi and only a tiny drop on the global scale, some people will say; and that is true. The surge of the industrial revolution alongside the huge appetite for high carbon energy forms have been culprits in the hands of climate change advocates.

Small contributions may be, but it has to be accepted that the climate that is seen to be misbehaving today, is also due to accumulation of small contributions.

Way before the mine was constructed, alarms had been raised about the environmental hazards Malawi was venturing into. At the forefront of the campaign was the human rights body, Centre for Human Rights and Rehabilitation (CHRR).

In a statement published in November 2005, CHRR was dazzled at how government rushed through the process of the establishment of the mine. According to CHRR, government officials and those of Paladin Africa were visiting the site of the mine clandestinely and were not divulging

any information about their visits.

"CHRR wishes to emphatically observe that, the secretive approach which the government and Paladin Resources Inc. have chosen to pursue leaves a lot to be desired. Besides, how is it that a bankable feasibility study is on and yet the environmental impact assessment study which is a standard requirement has not been carried out?" said CHRR in a statement dated November 4, 2005.

The human rights organisation said uranium mining was causing immense distress with respect to environmental and radiation aspects around the world, whatever the economic profits being accumulated from the investments.

CHRR noted that uranium mining carries with it the danger of airborne radioactive dust and the release of radioactive radon gas and its decay products which are hazardous to the general public and workers. Not in the least is the possibility of contamination of water resource with the toxic chemicals used in the separation of the uranium ore.

"From the economic perspective CHRR understands that it is clear there might be an opportunity for our beloved country Malawi to profit from uranium mining.

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Organic agriculture

Key to healthy soil, healthy products and healthy people

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Organic agriculture, according to USDA National Organic Standards Board (1997) may be defined as "an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain or enhance ecological harmony.

Organic agriculture may further be defined as the form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control to maintain soil productivity and control pests on a farm. Organic agriculture excludes or strictly limits the use of manufactured fertilizers and pesticides, plant growth regulators such as hormones, livestock antibiotics, food additives and genetically modified organisms.

Main Goal

The primary goal of organic agriculture is to optimise the health and productivity of interdependent communities of soil life, plants, animals and people

Background

Organic agriculture is the oldest form of agriculture on earth. Farming without the use of petroleum-based chemicals (fertilizers and pesticides) was the sole option for farmers until post-World War II (WWII). The war brought with it technologies that were useful for agricultural production. For example, ammonium nitrate used to make ammunition during WWII evolved into ammonium nitrate fertilizer; organophosphate nerve gas production led to the development of powerful insecticides. These technical advances since WWII have resulted in significant economic benefits as well as environmental

Maize grown in pits with manure; This type of planting conserves water and reduces soil erosion

and social detriments.

What Organic Agriculture Involves

Organic agriculture involves a production management system based on the ecological principles of nutrient cycling, biotic regulation of pests and biodiversity. Synthetic fertilizers and pesticides are replaced by sunlight-based inputs, such as plant and animal residues.

Why Organic Agriculture

Organic agriculture seeks to utilize those advances that consistently yield benefits (new varieties of crops, precision agricultural technologies, more efficient machinery) while discarding those methods that have led to negative impacts on society and the environment such as pesticide pollution and insect pest resistance. Some of the achievements and advantages of organic agriculture are as follows:

- Organic agriculture enhances the health of ecosystems, thereby promoting environmental sustainability;
- It promotes healthy products on the market place, ensuring that communities are consuming natural and tasty foods;
- GMOs are avoided in organic agriculture;
- It promotes food security; and
- Organic agriculture conserves soil and water ; and





Pit type of making compost manure for enhanced soil fertility and structure

- There is an increase in market demand for organic products which command premium prices over conventional produce.

Benefits of Organic Agriculture to Societies

Below are some of the main environmental and human health arenas whereby organic agriculture surpasses the conventional methods of farming:

Fertilizers: Depleted soil is a major cause of crop failures, a problem that ancient farmers often solved with organic fertilizers like animal dung which can restore soil structure over time by releasing nitrogen, phosphorus and potassium as well as various micronutrients. Other organic tactics for boosting soil quality include cover crops (also known as green manure), crop rotation and composting.

Pesticides: Plenty of pest killing chemicals are available, but in organic agriculture focus is more on prevention than treatment. For example, cover crops can suppress weeds before they sprout, while crop rotation keeps plants one step ahead of diseases. Mixed or interplanting can also capitalize on pest-repelling species like *Tephrosia vogelii* common in the country's undersowing cropping systems with maize crop. Some 'trap crops' even lure bugs and get them killed - for example, Japanese beetles are drawn to geraniums and a toxin in the petals paralyzes the beetles for 24 hours, usually providing enough time for a

predator to kill them.

Organic Agriculture and the Export Market

Most developed countries like America and the United Kingdom are showing keen interest to import organically produced products from African countries like Malawi, including sugar, coffee, tea, groundnuts, fruits and many more.

Challenges Facing Organic Agriculture

Organically produced foods are usually more expensive than conventionally grown food due to a variety of factors such as lower yields and more labour intensive methods utilised. Poor degraded soils also contribute to these challenges.

Success Stories

In Malawi MOGA (Malawi Organic Growers Association), an organic farming association has the primary goal of encouraging organic farming through extension services. The association focuses on 5 key areas: production and standards (quality control); institutional capacity building; market development; lobbying and advocacy and financial sustainability.

MOGA is also working with many farmers country wide. Farmers in group schemes where MOGA is working testify of great achievements after embarking on organic farming activities like manure production and its utilisation.



***Tephrosia vogelii* shrub: Juice from its crushed leaves may be used to control pests and diseases for crops like maize and vegetables**



Neglected and underutilised crop species

and their contribution to food security

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What are Neglected and Underutilised Crop Species?

The terms of neglected, underutilised and orphan crop species (NUS) are used to describe crops that receive little scientific research or funding despite their significance in food security in developing countries. These crops are grown primarily in their native areas or centres of diversity by farmers, where they are still important for subsistence of local communities. Some of the species may be distributed worldwide, but still tend to occupy special niches in the local ecology and in production and consumption systems. Although these crops continue to be maintained by socio-cultural preferences and use, they have remained inadequately characterized and neglected by research and conservation.

The NUS crop despite their low production status play an important role as nutritious food in the farmers' household diets, source of income, medicinal and cultural values while some are identified by certain ethnic groups.

Why Neglected and Underutilised?

Many neglected and underutilised crops were once widely grown but have over time



Nutritionally rich pumpkins produced locally

become less and less utilised for a variety of agronomic, genetic, economic and cultural factors. Promotion of monoculture and improved varieties of staple crops to achieve high yields per unit area has contributed to the decline in utilisation of the NUS crops.

Farmers and consumers are using these crops less because they are in some way not competitive with other crop species in the same agricultural environment.

The concern is that the general decline of these crops is eroding the genetic base and may prevent the use of distinctive useful traits in crop adaptation and improvement.

In Malawi, examples of NUS include sorghum, pearl millet, finger millet among the cereals; bambara nuts (ground beans), green grams, pigeon peas, lima bean (*Phaseolus lunatus* L.) among legumes; yams (*Dioscorea species*), coco yam (*Cocos nucifera*), african potato (*Plectranthus esculantus*) known as 'buye' in vernacular, among root and tuber crops; okra, pumpkin, Solanum species such as 'madwanzi', Cucumis species such as 'chipwete' and 'chikanyanga'; spice crop species such as chillies and 'kanganje' (*Brassica juncea*) among fruit and leafy vegetables and sesame (*Sesamum indicum*).

There are also species of fruit trees that are indigenous to Malawi and the Southern Africa



region such as 'masuku' (*Uapaca kirkiana*), 'bwemba' (*Tamarindus indica*), 'masau' (*Zizyphus mauritiana*), 'mpoza' (*Anona senegalensis*) and 'mteme' (*Strychnos spinosa*) which are now among crop species receiving research attention including value addition of their fruits into juice products. Crops such as cowpea, cassava and sweet potato are also regarded as neglected and underutilised; however this is not the same at national level. These three crops have received research and extension support to the point that they are contributing significantly to the food security of the country.

Importance of NUS for Malawi

Malawi has made tremendous progress in producing more than sufficient staple food for the past five years. However, there is still more to be done to achieve both food and nutrition security. Food security at all levels can be attained through crop diversification which eventually translates into dietary diversification. The NUS have a great potential to contribute in achieving sustainable national food and nutritional security.

The NUS crops have potential to give more contribution to livelihoods of people than their current contribution. There is great potential to improve nutrition of the population because many of the listed NUS are nutritionally rich and are adapted to low input agriculture. Loss of such species can have immediate consequences on the nutritional status and food security of a large section of our population which is poor. Where these crops are still being cultivated they are playing an important role to the well being of such households and local communities.

Enhanced production and utilisation of such crops can bring about better nutrition

and fight hunger.

Vitamin A content of many of our underutilised leafy vegetable species is comparatively higher than other well established vegetable crops that are popular in both super and local open markets. Bambara groundnut (*Vigna subterranea*), neglected as it is, its seeds are rich in protein (24%) with methionine levels higher than those in most other grain legumes.



The NUS also have a potential to improve incomes of the households. Promotion of utilisation of these crops in people's diets would increase demand for the crops and make them significant sources of income to the farming households. Growing market opportunities for the species may generate additional income to those farming communities who often are in less favoured environments where these crops have comparative advantages over staples or major crops.

Application of modern technologies to add value into diverse products, to extend their shelf life, to improve their transformation by agro-industries would provide new opportunities to strengthen the marketing of these species. The more diverse the uses, the better the opportunities for improving the status of underutilised and neglected species.

The NUS can improve environmental health which has been declined over years due to climate change and degradation of land and water resources. Majority of the

neglected and underutilised species occur in the wild and under cultivation in the marginalised environments. In such areas NUS are often the crops that can cope with such harsh environments where other major crops or staples fail to cope and can provide sustainable productions.

Promotion of the NUS would make them contribute to maintenance of rich agrobiodiversity and consequently more stable agroecosystems.



Finger millet (above) and the protein rich bambara nuts (right) are both adapted to low input agriculture



A synopsis of waste management in Malawi

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Malawi's Environmental Management Act (EMA) of 1996 defines wastes as domestic, commercial or industrial waste whether in liquid, solid, gaseous or radioactive form which is discharged, emitted or deposited into the environment in such a volume, composition or manner as to cause pollution. The definition of waste is however the topic of an ongoing debate because of an increasing global trend to reduce, reuse, rework, recycle, recover, the so called 'waste'. This being the case, a general definition of waste could then be formulated as something which nobody wants at a particular moment in time and which needs to be disposed of.

Today there is an increasing concern about waste management in the country. Evidence is rampant about our sub-optimal management of waste as evidenced by a number of issues that have formed the centre of heated debates and criticisms on those that are seen as responsible for waste management. These issues basically dwell on generation of waste, storage, collection, transportation and disposal of wastes in a manner that is in accord with the best principles of public health, conservation, aesthetics and environmental management.

In order to discharge the function of waste management, the government of Malawi has promulgated a number of sectoral policies and laws to govern waste management. Examples of these are the Local Government Act of 1998 which entrusts assemblies with the responsibility of sanitation, prohibition and control of pollution of any water in any river or stream, the Environment Management Act, 1996 which in part has rules and regulations governing management of wastes and the Public Health Act of 1947 which empowers local authorities to construct and maintain public sewers and forbids indiscriminate disposal of refuse. However, the fragmentation of

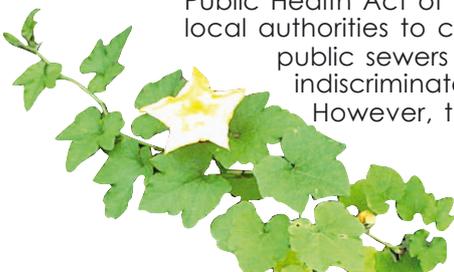


Residents risking their lives by scavenging in the unprotected dumpsites with festering and hazardous wastes

regulations and coordinating bodies of waste management has led to inefficiency in the management of wastes. Apart from having penalties that do not deter law breakers, these pieces of legislation in some cases conflict each other and hence provide a loophole for those that transgress the law.

Generally there has been a rapid increase in the amount of waste being generated in the country. This has been as a result of the rising population as well as an increase in disposable income. For instance currently Lilongwe City collects 109 tonnes of solid waste per day and Blantyre collects 30 tonnes; and this is just 30% of the refuse that is generated. The rapid increase in production of waste is not confined to big cities alone but the small towns have witnessed a rapid increase in the amount of waste being generated as well. In the past year Mangochi was collecting 11 tonnes of waste per day and Liwonde six tonnes per day.

Refuse heaps along roads, stream banks, gullies and broken sewer pipes are a common sight in our cities and towns. This is leading to contamination and pollution of the environment and hence presenting a serious health risk to the public. Solid waste is commonly stored in skips, refuse banks, dustbins, plastic bags and buckets. In towns like Blantyre skips are placed in strategic positions for communal use. However these storage facilities are inadequate. Blantyre has 100 skips, 58 of which are used by private companies and 42 are placed in markets





Skips placed in strategic points in cities and towns are often seen to be overflowing which is due to their inadequate numbers and infrequent collection

and unplanned areas. The inadequate waste storage facilities coupled with infrequent refuse collection has led to piling of wastes in homes and by road sides in towns.

There are insufficient vehicles in the city and town assemblies for collection of wastes resulting in insufficient collection of waste generated from industries, commercial areas and residential areas. For instance Blantyre has 18 old vehicles some of which have been on the road for seventeen years. The problem is also compounded by the difficulties presented by the unplanned areas in the peripheral of cities which have poor road network which can not easily be accessed by refuse collection vehicles.

The disposal facilities in the country are generally old, insufficient and laughable. They have outlived their life span and seriously need to be replaced or upgraded. The Mzedi dump outside Blantyre on the Chiradzulu Road has been in existence for 17 years, the Soche Sewage Works is 52 years old. One would ask whether Malawi should still use dumpsites in this age. When are we graduating from dumpsites to properly constructed landfills?

Apart from being archaic, the dumpsites are poorly located and not fenced. Most of the sites are located close to main roads and are a real eyesore to citizens and visitors alike. Apart from Mzedi, other

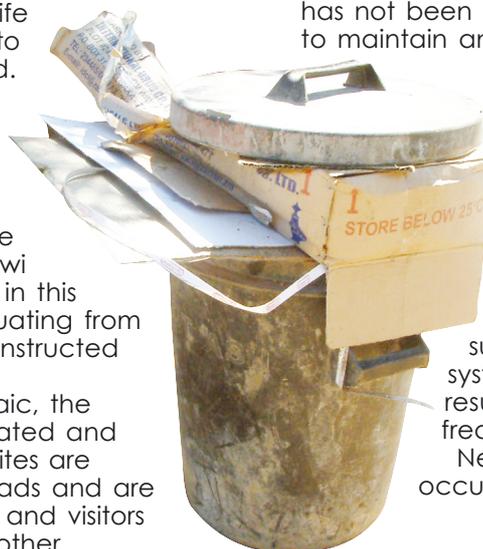
examples of dumpsites located next to main roads are Mangochi, Zomba and Liwonde. Because the dumpsites are not fenced, they are accessed by human scavengers. At Mzedi in Blantyre there are on average 150 children and young men who risk their lives by scavenging in dumpsites with festering and hazardous wastes.

There has never been a serious attempt to start sorting wastes in the country. The indiscriminate mixing of waste substances from the sources to the dump sites is a very poor waste management practice that leads to highly toxic leachate. This cocktail liquid formed in decomposing waste is potentially lethal as large scale ground water pollution near the dump sites can occur.

Despite sewage treatment plants having a huge potential for production of manure, this has not been tapped into because of failure to maintain and replace equipment in the existing sewage plants. This has resulted in frequent breakage of sewer pipes and sewage being washed away during the rains. Failure to monitor quality of industry and domestic effluent entering sewage system has been a problem too.

Substances that are not supposed to enter sewage systems have found their way in resulting into broken pipes and frequent spillage of sewage.

Needs and demands of occupational health are also mostly



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A synopsis of waste management in Malawi

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not adhered to. Workers collect and handle waste with or without inadequate proper protective clothing such as boots, heavy-duty gloves, overalls, masks and goggles. The workers are neither sent for periodical medical check-ups as is required by most laws in other countries.

There are many other issues that are indirectly impinging on proper waste management in the country, some of which are poor data collection and reporting, poor or non existence of cost accounting and budgeting, minimal or lack of involvement of the public in waste management, lack of education and awareness on public health as manifested by the many people who are seen urinating and throwing wastes in public places without any feeling of remorse.

At the moment, there is evidence all around us that we are heading for a waste management crisis. We can not wait any longer. The issue of waste management in Malawi is multifaceted and therefore we need holistic approaches to deal with it effectively. Waste management should follow a planned approach based around the idea of waste hierarchy and integrated waste management i.e. waste minimization, recycling, material/energy recovery and landfill disposal. Management of wastes should not be viewed as the responsibility of city or town assemblies alone. The general public needs to be involved fully. The public can be engaged in public-private partnerships, medium-size

enterprises in recycling and community based waste management. Government needs to provide incentives for public and private participation in waste management.

Since our policies and laws governing waste management are old, fragmented and ineffective, there is need to review and harmonize the legislation into a single waste management policy and act. The waste management bye laws in cities and towns need to be reviewed regularly as well. We further need to develop a policy on urban development to strengthen our policies and laws on waste management.

There is need for capacity building in various aspects of waste management such as education and awareness, equipment and infrastructure development and maintenance and monitoring of effluents. Currently financial resources allocated to waste management in town and city assemblies are awfully small. There is a great and urgent need to increase financial allocation and human resources towards waste management.

In modern times waste generation is viewed as a key indicator of an unsustainable operating society, so effective waste management solutions should aim at zero-waste to disposal sites and encompassing a 'cradle to cradle' approach (from the source of production to the point of disposal). As a society we need to start increasing cleaner technologies and demanding waste-wise products i.e. products that are designed in such away that they can easily be dismantled for material recovery and recycling.



Malawi's unprotected and archaic dumpsites are often located close to main roads and are a real eyesore to residents and visitors alike. In the picture is Mzedi dumpsite in Chiradzulu district, which is where waste collected in Blantyre City is disposed





Mudi River where it passes through Blantyre Market; as it was before the clean up



Participants of the campaign removing trash from within and around the Mudi River

Clean Up the World Campaign; Communities caring for nature to conserve biodiversity

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Clean Up the World is a community based environmental campaign that inspires and empowers communities from every corner of the globe to clean up, fix up and conserve their environment. It is held in conjunction with the United Nations Environment Programme (UNEP) and it mobilises an estimated 35 million volunteers from 120 countries annually, making it one of the largest community-based environmental campaigns in the world.

Malawi joined the rest of the world in celebrating the Clean Up the World Campaign 2010 which took place from 17th to 19th of September. The campaign was celebrated under the theme 'Communities Caring for Nature to Conserve Biodiversity' translated to Chichewa as '*Tiyeni Tisamale Chuma Chathu Chachilengwedwe*'. This is in line with the United Nations (UN) which declared 2010 as the 'International Year of Biodiversity'.

The campaign brought together communities, schools, government officials, members of parliament, the private sector,

market vendors and individuals to clean up Blantyre Market and the Mudi River where it passes through the market. The targeted area has been subject to heavy littering mainly by market users while the River is significantly polluted with toxic wastes from many industries in Blantyre. The symbolic event aimed at inspiring the nation to keep their surroundings clean in order to conserve biodiversity.

Participants were seen on the early morning of the 17th with tools in hand ready to remove trash from the River. Sweeping of the market premises was followed by dredging of trash from the River banks and from the River itself. The amount of trash that the group managed to remove from the River within a short time demonstrated just how serious the level of degradation is of the River.

Exercises of cleaning up the River, proper disposal of waste generated from surrounding areas and reduction of toxic wastes discharges into the River are efforts that need to be encouraged and carried out continuously for biodiversity to be significantly restored as it was in earlier years in the River.

The day was concluded with gymnastic performances by school children, drama, dances, presentation of gifts to participating groups from sponsors of the event and closed with a speech by the Deputy Principal Secretary of the Ministry of Natural Resources, Energy and Environment, Mr Callun Sibande who also graced the event.

www.cleanuptheworld.org





A stock pile of natural wood near a tobacco barn at an estate in Namwera, Mangochi.

Fire/flue cured tobacco

Environmental cost and greed: A case of Namwera in Mangochi, Malawi

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As we continue to bemoan the rate at which environmental degradation is occurring in the country, we cannot stand by and ignore the huge environmental cost incurred by flue cured or fire cured tobacco to our natural environment particularly indigenous forests.

Tobacco is the major cash crop in Malawi and one of the major foreign exchange earners. It contributes 76% of the country's total export earnings, which is higher than most countries in the world (Table 1). However, it appears as if the country is unconcerned with the huge environmental cost this crop is incurring. If we seriously analyze the cost and benefit of this crop within the context of environmental sustainability, the growing influence of anti-smoking lobbyists and Malawi's increasing human population pressure on land and its resources, it is apparent we need to reassess the situation.

In August 2008, I visited Namwera in Mangochi District which is one of the tobacco growing areas in Malawi. The estates, mainly owned by Malawians of European origin cover the majority of the best arable land when the majority of indigenous Malawians own land that is less than 1 hectare, with an exception of those targeted under the land resettlement project. Ironically, Namwera is also well known for general low standards of living.

I noticed that Namwera has large swathes of deforested land like many other tobacco growing areas.

Despite the fact that most tobacco in Namwera is cured using indigenous trees as fuel, there is very little effort by the estate owners to reforest and open up new forest areas for use in curing their tobacco thereby giving back to the environment and communities alike.

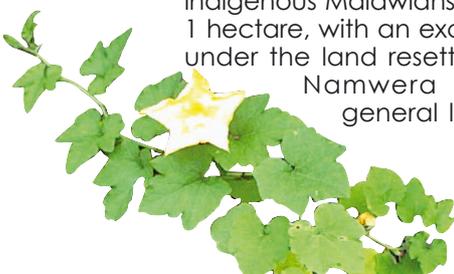
Some tobacco farmers have planted exotic trees, mostly eucalyptus, unfortunately for purposes other than curing tobacco. The exotic trees are merely used as wind breaks or as stakes to indicate boundaries. These are rarely felled to be used as fuel wood.

The Choice of Indigenous Trees

The relatively cheap cost of natural wood compared to other fuels is probably what makes indigenous trees attractive as a curing fuel source. If natural wood was expensive, surely most of the tobacco farmers could have been investing in reforestation projects around their estates.

The inadequate environmental protection initiatives in most estates also put into question the enforcement of lease agreements by relevant authorities. Land lease agreement entails that lessees put deliberate measures to ensure sustainable use of land. They also provides for tobacco estates to set aside 10% of the land for growing trees.

In recent years, the bulk of the wood plunder is imported from Mozambique as most of Namwera's natural forest reserves have been depleted. One would be curious to learn why this is the case. One of the major reasons behind the depletion is weak law enforcement creating loopholes such as corruption by forestry officers.



The scourge of corruption has not spared local leaders who easily offer such land and its precious natural wood to unpatriotic (read greedy) Malawians after receiving monetary inducements.

There is virtually very little charcoal produced around Namwera as compared to other areas in Malawi. It is apparent that deforestation in the area has principally been caused by the inordinate demand for natural wood for curing tobacco.

To illustrate the rate at which indigenous trees are depleted, experts estimate that for 1 metric tonne of tobacco to be cured, 12 cubic metres of wood is consumed. Flue cured tobacco production is estimated to be over 50,000 metric annually. This is exerting huge stress on our fragile environment.

When one critically examines those directly affected by deforestation, it is not the large tobacco estate owners. Rather it is the poor and vulnerable groups in Malawi who bear the brunt. It is the women and children who have to walk long distances to fetch fuel wood and subsistence farmers who are vulnerable to impacts of climate change made worse by deforestation.

Our heavy dependence on tobacco as a country is not sustainable. Looking at statistics of Malawi's in terms of percentage total earnings, one is scared to imagine what would happen if there is going to be a catastrophe (natural or otherwise) causing substantial loss in tobacco production or market failure.

We seriously need to start diversifying our economic base to withstand any shocks that are likely to come when tobacco loses on the international market.

Finally, every estate owner should take responsibility to replace indigenous vegetation lost and to create new forest gardens as a source of fuel wood for curing tobacco thereby contributing to environmental sustainability.

Malawians heavily rely on natural resources therefore the surrounding communities stand to benefit from the forests for their livelihoods as well.

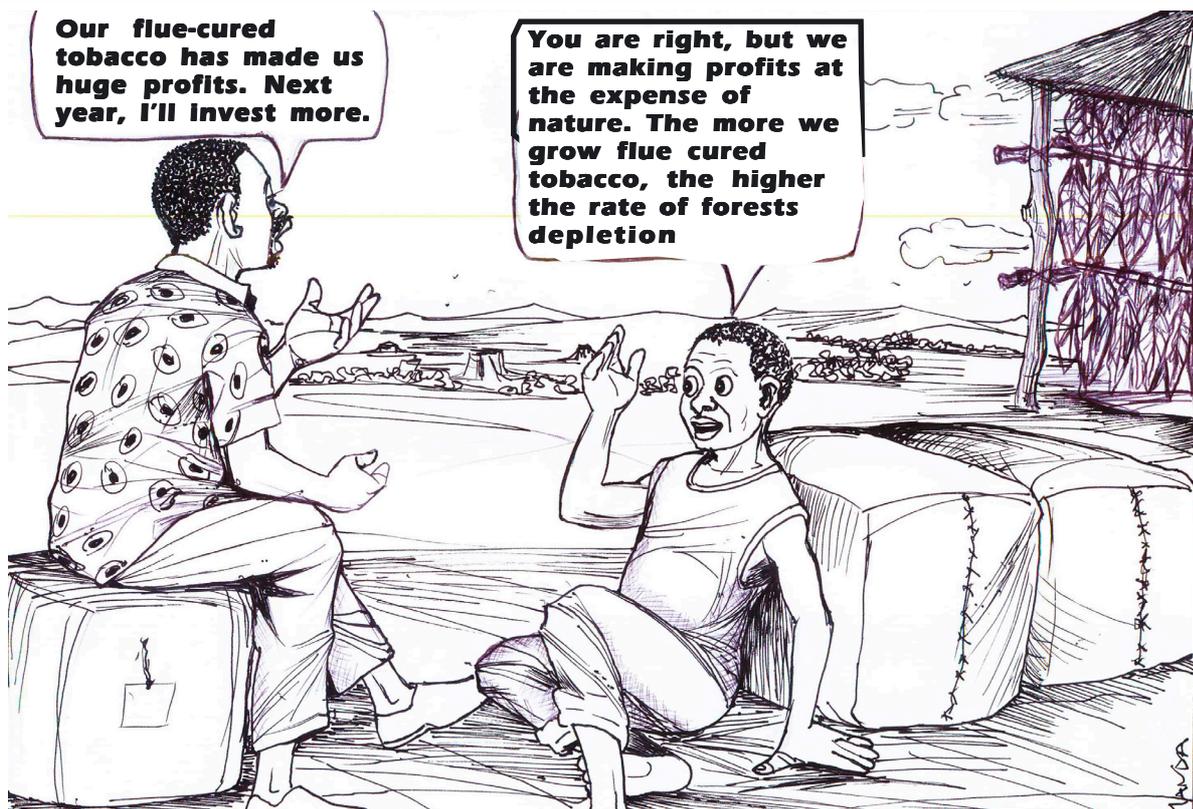
Table 1. Global Tobacco Exports

Country	Total Export earnings	Earnings from tobacco	Tobacco earnings as % of total earnings
Argentina	12,235	143	1.2
Brazil	35,965	804	2.2
Malawi	383	293	76.5
Zimbabwe	1,235	450	36.4
Turkey	14,715	309	2.1
India	19,795	163	0.8
Indonesia	33,815	81	0.4
Thailand	32,473	142	0.4
China	84,940	141	0.17

Source: Panos

ZOLONKHOPE

By Sam Manda



Towards the Climate Change Conference in Cancun: Some of the key Issues

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Malawi signed both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol to the UNFCCC. The country has therefore regularly participated in the negotiations which have taken place over the years inclusive of Interessional and Conferences of the Parties sessions. The next session will be held in Cancun, Mexico from 29th November to 10th December 2010.

Key Issues Under Negotiation in the UNFCCC

The main issues being negotiated in the UNFCCC are those identified under the Bali Action Plan which require long term co-operation and action. These centre on the four building blocks of: adaptation, mitigation, technology transfer and climate financing. The other issue likely to separate the North and the South will be the determination of the South to get a legally binding agreement in Cancun. There are two negotiation tracks in tackling these key issues; the Kyoto Protocol and the UNFCCC. The Kyoto Protocol discusses at length the duties of developed countries under the four thematic areas stated by the Bali Action Plan. In addition to the four identified areas, the UNFCCC requires developing countries to significantly reduce emissions from deforestation and forest degradation (REDD).

Adaptation and Climate Finance

Negotiations on enhancing actions on adaptation under the Bali Action Plan will dwell on funding for adaptation. This is critical and will remain of immediate concern to developing countries such as Malawi who have already started experiencing the impacts of climate change. However despite least developed countries

preparing National Adaptation Programme of Actions in 2006 in accordance with the UNFCCC, many of them have not yet received the requisite resources to enable them implement this instrument. In addition, developed countries have made various pledges in line with their commitments under the UNFCCC to assist developing countries cope with the impacts of climate change; to date however, very little of these funds have been disbursed. The Cancun Conference is also expected to agree on an Adaptation Framework. Some of the issues to be debated will include how to ensure that the principles of the Framework focus on the particular needs of the poorest and most vulnerable people and ensuring that it provides for transparency and participatory decision making.

Mitigation by Developed Countries and Future of the Kyoto Protocol

Key issues to be contested under mitigation will include emission reduction targets and the future the Kyoto Protocol. Indications from the recent UNFCCC intersession in Tianjin are that certain developed countries would like to see the Kyoto Protocol completely replaced. It is very likely that in Cancun one of the hotly contentious issues amongst parties will be whether to amend the Kyoto Protocol or completely replace it. The challenge will be how to

include other countries like US and major developing countries to take responsibility. Many hope that Cancun will pave way for framing a post-2012 Kyoto Protocol which will contain voluntary quantified target reduction commitments by the major developing countries such as China, India, Brazil, Mexico and South Africa. Also being envisaged is a post-2012 Kyoto regime that provides for penalties for non-compliant parties which are deterrent enough to promote compliance.

Technology Transfer

The transfer of technology remains an intractable issue under the UNFCCC despite very clear developed country commitments. This is likely to be contentious as well. The



A study of Kayelekera Uranium Mine

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However, we would like to raise this supreme and most fundamental question of whether or not the economic benefits outweigh the social concerns and hazards considering that the Kayelekera mine life span will only be 10-12 years", said the body.

These are pertinent questions that needed answers then and whether the start of the mine satisfied such concerns is certainly another story.

But the fact now is that the mine is here. In a world so consumed with money making and profiteering and the power play that these bring, it is easy for environmental pundits to lose the battle in their efforts to safeguard the state of the environment that not only human kind but also the very mines rely upon for life.

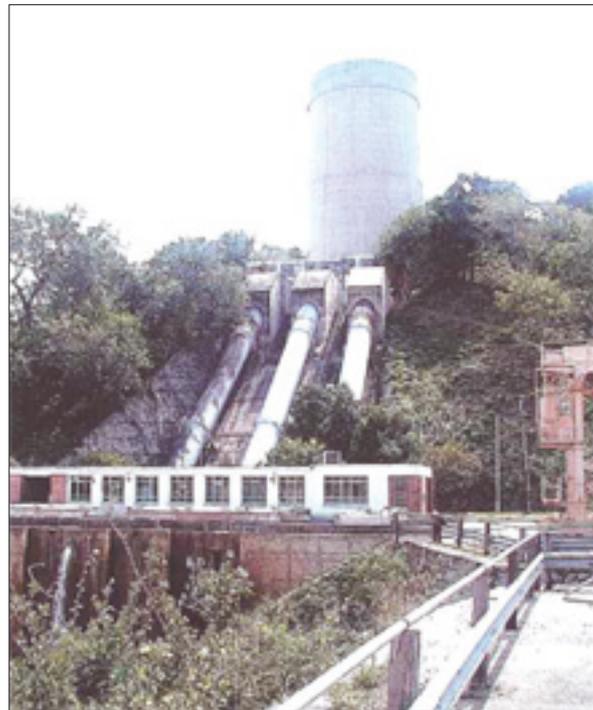
"We are serious about the integrity of the environment. We are taking the uranium out of the ground, we are exporting it to be used for productive purposes, so we should be getting a medal for cleaning up the environment." Neville Huxham, Country Director for Paladin Energy Africa told IPS in August this year.

Should Paladin be Taken by its Word?

Delicate Choice

The mine is expected to contribute 10% and 20% of Malawi's gross domestic product and total export earnings respectively. Does boosting up the performance of ESCOM appear in the picture of how these returns are to be spent?

There is no question that Paladin can only convert to hydro power only if ESCOM



Nkula Falls, where electricity is generated by running water

increases its capacity and be able to supply power 24 hours a day to enable a power-intensive mine like Kayelekera to run without stopping.

The mine is desirable on many accounts. But its emergence has put Malawi's energy question to test, especially because there is the environment to protect, a global climate change fight in which to participate, lives to save and money to make. The choice about what to sacrifice is a delicate one.

Towards the Climate Change Conference in Cancun:

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developed countries now insist that technology transfer must be through the private sector which obviously requires commercial terms which the developing countries including their private sectors can hardly afford. Provision of technology transfer and climate finance are the key issues of concern to most developing countries. Technology transfer and climate finance from developed countries are the driving forces for poor countries to develop coping and adaptation strategies in response to impacts of climate change.

Legally Binding Agreement in Cancun

The zeal to get a legally binding

agreement in Cancun will stem from the experiences at the Copenhagen Climate Conference in 2009. There were problems with the process, as developing countries thought that it lacked transparency which led to breakdown of trust. In Copenhagen, the situation was chaotic and the high level segment nearly collapsed. As a result the final outcome was a Copenhagen Accord, which was merely 'noted' and not endorsed by the Conference of Parties. In addition, there is almost a disconnect between the Accord and the Bali Action Plan. Therefore developing countries will be seeking a legally binding outcome in Cancun.



Biodiversity loss



Bush fires, so rampant in Malawi destroy biodiversity



Bees, agents of pollination and a source of honey are also under threat



The aloe vera plant has many medicinal and cosmetic uses



Production of fish, a major source of protein in Malawi is declining

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As we continue to celebrate the declared international year of Biodiversity, let us always remember that we are an integral part of nature; our fate is tightly linked with biodiversity, the huge variety amongst animals and plants, the places they live and their surrounding environments all over the world.

We rely on this diversity of life to provide us with the food, fuel, medicine and other essentials and ecosystem services we simply cannot live without. Yet this rich diversity is being lost at a greatly accelerated rate because of human activities. This impoverishes us all and weakens the ability of the living systems on which we depend to resist growing threats such as climate change.

Research has shown that the great loss in biodiversity is a result of not knowing how much species of different fauna and flora we have. *So, if we as a country do not know how much there is to begin with, we can not know exactly how much we are losing.*

Some Statistical Illustrations of Biodiversity Loss Malawi is Facing:

- The total forest woodland cover is estimated to be declining at the rate of 1.0 to

2.8% annually due to deforestation for fuel wood, charcoal and settlements.

- Fish production declined from an estimated 70,000 metric tonnes to 50,000 metric tonnes between 1980 and 2000

Major Threats Affecting Malawi's Biodiversity:

- Loss and fragmentation of natural habitats
- Over harvesting and/or over exploitation of natural resources due to poverty
- Invasive species
- Pollution
- Climate change

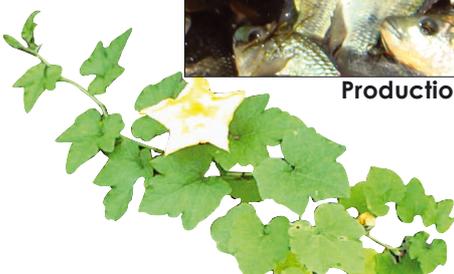
Research also shows that threats faced by biodiversity today are all caused by human behavior which has changed the earth's ecosystems more rapidly and extensively.

As a country, it is therefore the responsibility of every Malawian to:

- Avoid bushfires which kill plants and animals
- Encourage each other on family planning methods to reduce the population growth which relies on the same natural resources
- Practice sustainable farming systems which reduces erosion and siltation
- Avoid deforestation for charcoal burning and settlement
- Protect the remaining few endangered species
- Sensitise your neighbour on the economic importance of biodiversity

Imagine the situation in the next 30 years if measures are not taken; therefore let us continue to celebrate this year by conserving biodiversity for improved livelihoods.

Adapted from http://wwf.panda.org/about_our_earth/biodiversity/?gclid; World Research institute and CBD report by EAD (2010)



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Threat and Loss of NUS

The NUS of Malawi have been under threat of loss by being subjected to genetic erosion, first through the promotion of monoculture production of major crop staple and cash crops; Secondly, deforestation and overexploitation of ecological areas of the NUS has also contributed to decline in their availability. Climate change which has resulted in moisture and heat stresses has pushed some of the NUS to their survival limits and loss. Loss of indigenous knowledge about some of the NUS has contributed to their decline as the older generations pass away with their knowledge while the younger generations adopt food diets based on fewer introduced crop species.

Way Forward: Need for Conservation and Research on NUS

Malawi has been initiating programmes to conserve and promote utilisation of NUS. Conservation activities have been championed by the national plant genetic resources centre (Gene Bank) but these have their limitations. There is still an urgent need to conserve and promote utilisation of most of these crops. *Ex situ* conservation of the NUS need to be complemented by effective promotion of their utilisation which can be enhanced by conducting research on the NUS production constraints on both yield and quality.

There has been research conducted on some of the NUS including indigenous leafy vegetables, fruits trees such as amaranthus, roselle, cat's whiskers, jews mallow and wild loquat. However poor status of some of underutilised and neglected species conservation has hindered successful improvement and promotion. Efforts should continue to be directed towards the collection of those species that are



Okra (*therere*) contributes to dietary diversification

not yet collected, maintenance of their resource base, both through *ex situ* and *in situ* conservation methods, to ensure their development and their sustainable use by present and future generations.

There is a need to study their ecology and how to improve their yield and quality which are mostly the characters demanded by the market. There has also been little that has been done to identify most effective marketing and policy frameworks to promote their use and maximise their economic value.

The conservation and research efforts led by both governmental institutions (Ministry of Agriculture and Food Security), non-governmental organizations and the University of Malawi (Bunda College of Agriculture) in conservation, research and promotion of some of the NUS such as indigenous vegetables and fruits, roots and tubers and legumes need to receive more support at policy level and in resources.

Inclusion of NUS in the national education curriculum is vital for their sustainable conservation and utilisation.



Wild fruits: bwemba and masuku (inset) are a source of nutrition and livelihood



