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CLIMATE EXCELLENCE AFRICA

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In brief:

The effects of climate change on environmental sustainability and human wellbeing are forcing most countries to move away from traditional "brown" economy to the 'green economy' - a viable option for sustainable development.

A green economy can be described as one that results in "sustainable social equity, while significantly reducing environmental risks and ecological scarcities."

According to the United Nations Economic Commission for Africa (ECA), green economy comes against the backdrop of deprived wellbeing and of serious crises in climate, biodiversity, food, fuel and water, and most recently, the financial crisis.

Inside this issue:

Sustainable Agriculture	2
Renewable Energy	2
Solar project to be launched in the Maghreb	2
Reducing emissions from transport	3
Efficient Buildings	3
Feature	4
Leisure	4

African countries strive to adopt climate change resilient economies

As major African economies such as Nigeria and South Africa (as well as smaller ones, including Rwanda [energy], Kenya [wind and geothermal energy], Uganda [organic agriculture], and Tunisia [solar energy] to mention a few) adopt low-carbon strategies, the 'green economy' has moved from being a preposition to fast becoming a reality. With the best scientific evidence available showing that Africa, one of the most vulnerable regions in the world to negative anthropogenic climate change, is already experiencing the impacts of a variable and changing climate, apprehension (see below some doubts that have been voiced about the 'green economy') is giving way to action in an effort to try and deal with the most significant challenge of our time.

Ms. Tanja Faller, an energy economist at the African Development Bank (AfDB), has argued that "clean energy is an opportunity to leapfrog the continent to a green growth path." As the premier regional development and a leader in supporting green growth in Africa through a variety of tools – grant support, sovereign lending, sharing knowledge, private project financing, equity, and policy-based lending – AfDB is in good stead to influence actions (measures and policies) that have material bearing on sustainability throughout the continent.

Of course, there are important issues and challenges not least of which is finding agreement on the meaning of "green growth", as well as the problems that emerge in its implementation within public policies. There are also doubts with respect to whether current infrastructure, despite all its multiple shortcomings, can

support adaptable, low-carbon growth? That said, a number of initiatives reported in this issue point towards intensifying efforts at policy and investment levels to 'green' important industries and sectors, if not entire economies, material barriers to achieving adaptable low carbon infrastructure notwithstanding.

In Nigeria, for example, the country's low carbon industrial strategy seeks to diversify and decarbonise the economy as part of its growth blueprint – Vision 2020 – which hinges industrial growth and low carbon (or green) development on diversification away from dependence on crude oil. South Africa is set to install the largest power plant running exclusively on gas engines in the continent. According to Henri Loubser, the Managing Director of Sasol New Energy Holdings – the company responsible for Low Carbon Electricity in Sasol, "low carbon electricity generation is a key driver for Sasol to meet its environmental sustainability targets as well as to reduce its cost base for its electricity demand."

The enthusiasm which has greeted renewable energy – including related aspects of access to clean energy and energy and resource efficiency, as well as 'green industry' as an integral part of the 'green economy' is understandable in the context of the acknowledged potential renewable energy technologies has to meet society's energy needs and address the challenge of climate change (see, for example [IPCC, 2011](#)).

Disquiet

As happens with most fads, current interest in 'green economy' has not been without controversy. Concerns have been raised by governments, civil society and social movements. The following are representative: (1) Will reliance on new technologies (such as nanotechnology, synthetic biology, "climate ready" crops and others) put our social and environmental security further at risk rather than assure it? (2) Will dropping the social pillar of sustainable development for a "green economy" secure bringing billions out of poverty? (3) What social, economic and ecological problems could result from a new 'bio-economy', including the intensified use of biofuels, biomass and other resources? (4) Will a rush to this new 'green economy' threaten the rights and livelihoods of the world's peasants, pastoralists and fisherfolks who currently provide 70% of global food production? (5) Can we accept that in the name of 'a climate emergency' (page 2)

About Africa:

- Second largest and second most populous continent after Asia.
- Population of 1B (2009)
- Has 54 sovereign countries
- About 50% of the population suffers from water related diseases (WHO)
- The majority (about 75%) of the population in western and central Africa are subsistence farmers who live in rural areas.
- The longest river in the world, the Nile traverses 9 African countries.



Massive solar project set for northern Africa.

A German-led consortium intends to fund an international solar-energy plan to the tune of €400 billion meant to gather solar heat in North Africa, generate electricity and export the surplus to Europe. If implemented with success, this would be the largest green-energy project in the world. The project to be funded, called the Desertec, envisions the use of relatively low-tech solar thermal power – using mirrors in the desert to heat up water, which drives turbines in a local power plant – rather than an array of high-tech photovoltaic cells.

With excess energy expected to be exported, the Desertec plan will require a new grid of high-voltage transmission lines from the **Maghreb desert** to Europe. No new technology will need to be developed. According to Hans Müller-Steinhagen, of the German Aerospace Centre who has researched the feasibility of Desertec for Germany's Environment Ministry. The idea has existed for years, but the high cost of building the infrastructure has kept investors away.

Work on independent plants has started in Morocco where a 125 megawatt concentrated solar power plant was recently approved. The ground-breaking renewable energy project at Ouarzazate is the first project in a regional plan that will eventually triple today's global investments in concentrated solar power. The regional plan is funded to the tune of \$200 million in Climate Investment Funds (CIF) and African Development Bank (AfDB) and World Bank co-financing.

Global investment in renewable energy jumped 32% in 2010, to a record \$211 billion—*Global Trends in Renewable Energy, 2011*

Sources: Internet

(Cont. from page 1) a handful of powerful players will geo-engineer the planet? In intergovernmental negotiations, some developing countries have also been questioning the relevance of the green growth strategy for their development. Specific questions raised include: To what extent can green growth contribute to poverty eradication? Where would the financial and technological resources required to implement this strategy in developing countries come from? How would this strategy affect trade and development finance modalities? This issue brings to focus some of the milestones and opportunities in key economic sectors of agriculture, renewable energy, transport, efficiency in buildings. It highlights some of the efforts and success stories by African countries to adapt and mitigate the effects of climate change.

Through our coverage of these issues, we hope we can shed more light to the debate and contribute to the defining of a sustainable, **greener** pathway.

Shift to sustainable agriculture

Agriculture, and consequently food production in Africa has mostly been influenced by the weather patterns as it mostly relies on rain fed irrigation for farms which are commonly small scale subsistent farms. This has led to food security depending on natural weather conditions which continue to be unpredictable.

The shift from rain fed subsistence farming to large-scale irrigation and mechanization of agriculture have led to increased food production and increased returns for farmers.

Most government programs in less agriculturally productive regions have focused towards the distribution of subsidized fertilizers for enriching less productive soils and investment into research for the development of drought hardy plant strains that withstand harsh

weather conditions ensuring consistent food supply. The use of farm inputs and fertilizer has been important in the effort to increase production in the continent through enriching the less productive soils.

Planning has also been important in the reclamation of lands for agricultural production as well as securing land for mass production and large scale irrigation.

An example from Kenya was the re-planning of the Nyando swamp in Ahero for rice production. The project led to the resettlement of residents living on swampy fields and suffering from perennial floods engage in rice production. This initiative has contributed to food production for the country as well as increased incomes for the local community and the region.

Renewable energy

Investments in alternative energy have been increasing over the years following the high costs and unreliable supply of electricity arising from the use of thermal generators as substitutes to hydro electric turbines which periodically fail due to low water levels in reservoir dams at periods of drought and reduced rainfall.

Research in the investment in wind, solar and geothermal energy has been progressive and is predicted to reduce reliance in non renewable energy given the available potential of these resources in the continent. These investments will particularly target the unconnected populations that continue to put pressure on the limited available supply. Similarly, through subsidies in the importation of solar panels for lighting and their inherent low operational costs and long lifespan, their popularity has greatly reduced the demand for mains electricity connection. The production and use of biogas generated from domestic and animal wastes has also proven popular amongst the rural population reducing the demand of paraffin, charcoal and firewood for cooking and lighting.

Though initial investments in alternative energy at household and national levels are high, the long term benefits are less costly (financially and environmentally) and more reliable. In Kenya for example, geothermal power which currently accounts for 12% of the total electricity supply, is expected to be the main producer by the year 2014 contributing more than 50% to the national grid, and lead to reduce power outages as well as more electric connections. This is a combined government and world bank project and will be the largest geothermal project in Africa.

It is undisputed that Africa is the richest continent in terms of its natural resource endowment but the utilization of these resources has been limited due to the limited financial and technological capacity. Through public private sector partnerships, development partners have continually invested in renewable energy in the bid to promote environmentally friendly and more sustainable sources of energy.



Reducing emissions from transport

Emissions from motor vehicles, considered to be one of the highest contributors of green house gasses have continued to cause insurmountable damage to the African environment due to the increasing vehicle fleet caused by overreliance on road transport and the low quality fuel currently in the markets of most African countries. The importation of second hand vehicles and the poor driving conditions in the continent have also been contributors to increasing emissions from the transport sector.

In light of the increasing pollution and as part of a global campaign to reduce emissions from transport, Africa has made a clear statement of its intentions to reduce emissions from transport through individual country efforts and joined regional commitments.

Individual countries have put in place policies that have led to the elimination of the use of leaded petrol in cars, limitation of the age of used imported vehicles and currently lowering the sulphur levels in diesel to 50 PPM.

In the partnership for clean vehicles and fuels (PCVF) initiative by the United Nations Environmental Programme aimed at reducing emissions from transport by increasing vehicle fuel efficiency, massive campaigns are underway to reduce the average light duty vehicles fuel consumption by 50% by the year 2050. Kenya has already achieved a 1.17 % drop between the years 2005 and 2008 as indicated by a study done by Climate XL. (This reduction was from 7.69 l/100km in 2005 to 7.6 l/100km in

2008). The average annual global percentage change between 2005 and 2008 was -1.7% as reported in the International energy Agency working paper series May 2011. Advancements have also been made by South Africa where the average LDV fleet fuel consumption is about 7.2 l/100km and the sulphur in diesel levels also at an African record low of 50 PPM in tandem with international objectives of achieving sulphur free diesels.

With improved efficiency of vehicles, there is expected to be reduced emissions as investments and popularity of non motorised transport and public transport continue to increase. Similarly, with the soaring fuel prices, there is expected to be increased popularity

Efficient buildings

Buildings have been shown to be great consumers and possibly wasters of water and electricity due to their architectural designs or the behaviour of the building's occupants. To satisfy their purpose, buildings, mostly those that accommodate high number of people tend to consume huge amounts of electricity for , lighting, heating and cooling in addition being used by electrical equipment such as lifts, computers etc. At the same time, 80% of water (which is pumped using electricity) used for cleaning, flushing toilets in addition to other uses normally goes to waste due to faulty appliances and/or poor user behaviour.

Given that most of the buildings in Africa

are built in traditional architectural and engineering specifications/designs, and the age of the appliances therein, they tend to waste most of the resources meant to be used within. While the behaviour of occupants can be modified, the use of 'intelligent' designs and appliances can greatly reduce the losses accruing from these wastes and save huge amount of money and irreplaceable resources. Given the location of Africa on the equator and the slight variation in seasonal weather conditions, there is high potential for designing and operating low cost buildings with minimal consumption of water and electricity as there is minimal need for artificial cooling and heating.

The advancement in technology globally has led to buildings being fitted with solar panels for lighting, press taps on sinks and urinals, water recycling and the use of natural ventilation methods.

These building typologies are already gaining popularity in Africa with the united nations environmental programme buildings in Nairobi and the Eastgate mall in Harare being notable examples. Local authorities therefore need to be encouraged to revise their physical planning regulations and building codes to enhance the enforcement of such initiatives. Investors also need to be educated and informed on the benefits of investing on energy efficient buildings that would reduce operational costs and save

Feature: Biomimicry and climate change. By Gamelihle Sibanda

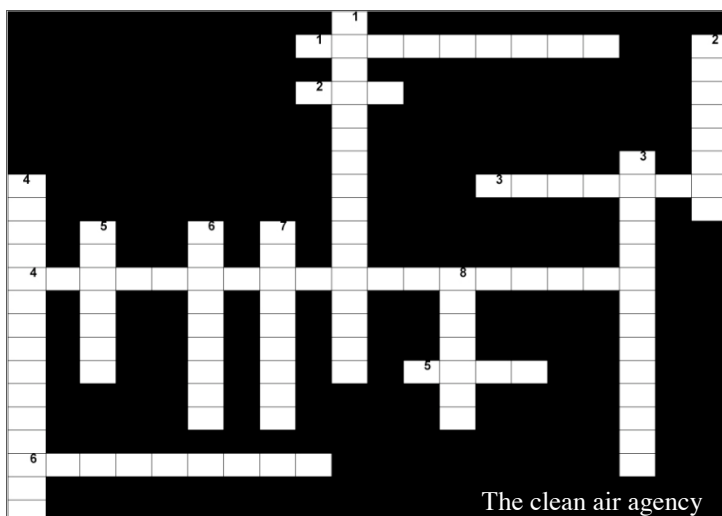
Can biomimicry, the conscious emulation of nature, help us to adapt to and mitigate negative effects of climate change?

Before we can answer this question we need to understand what biomimicry is about. Biomimicry (from bios, meaning life, and mimesis, meaning to imitate) is a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems in a sustainable manner.

"The core idea is that nature, imaginative by necessity, has already solved many of the problems we are grappling with. Animals, plants, and microbes are the consummate engineers. They have found what works, what is appropriate, and most important, what lasts here on Earth. After 3.8 billion years of research and development, failures are fossils, and what surrounds us is the secret to survival" (Biomimicry 3.8)

Ok, We can study how nature has solved design problems faced by humankind; how does that help us deal with climate change challenges? (continued next page)

Cross word puzzle



The clean air agency

Hints

Across

1. Wrapping for a product
2. Large vehicle
3. Sharing a ride
4. An energy saving light bulb
5. Less \$, less packaging, buy in —
6. Gasses released to the air

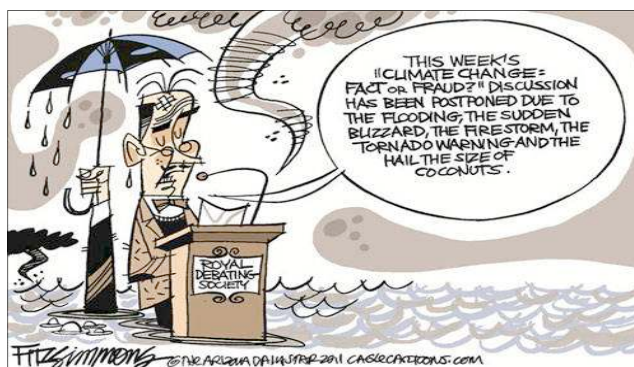
Down

1. Trees, water, oil
2. Our garbage goes here
3. Home liquid warmer
4. Made with recycled material
5. To recycle food and yard waste
6. Less and less
7. Does more without wasting energy
8. Smoke from the tail pipe of a car or truck

Quote of the month

"You can make a lot of speeches, but the real thing is when you dig a hole, plant a tree, give it water, and make it survive. That's what makes the difference"

Wangari Maathai (environmental activist, first African woman to receive the Nobel Peace Prize)



Did you know that:

Water insecurity linked to climate change threatens to increase malnutrition by 75–125 million people by 2080, with staple food production in many Sub-Saharan African countries falling by more than 25%. UNDP

Upcoming events

Nigeria Economic Forum 2011
August 17-18, 2011
Johannesburg, South Africa
Check: petro21.com/events/?id=718

The East African Power Industry Convention (EAPIC 2011)
September 5-9, 2011
Kampala, Uganda
Check: www.eapicforum.com/en/index.php

CLIMATE EXCELLENCE AFRICA

Nairobi Office

Mailing Address:
11 Fatima Court,
Marcus Garvey Road,
Kilimani
P.O. Box 8099 - 00300
Nairobi, Kenya.
Phone: +254 203 585 760
E-mail: info@climatexl.org

Harare Office

P.O. Box WGT 485
Westgate, Harare
Tel: +263 772 253 475



Climate XL

EXCELLENCE IN CLIMATE CHANGE ADAPTATION AND MITIGATION

Climate XL is a not for profit NGO registered in Kenya in the year 2007

Our activities include:

- 1) Climate proofing of plans and strategies for private and public sector organizations
- 2) Supporting integration of climate change and climate change adaptation strategies into local, national, regional and international development policies, programs and planning processes
- 3) Facilitating development and deployment of intelligent tools and policies for climate change adaptation into various sectors
- 4) Promoting biodiversity, bio-security and environmental sustainability to enhance food security
- 5) Bridging the gap between North and South priorities and facilitate South-South cooperation towards an inclusive global agenda for climate justice based on the principle of "common but differentiated responsibility."

We champion sustainable environmental practices and climate change combating methods in Africa and globally. We encourage partnerships with interested members and institutions (both government and private).

Climate XL will soon start offering Environmental Impact Assessment/ Environmental Audit services in addition to carrying out both public and private sector climate change vulnerability assessments and preparation of climate adaptation plans.

Follow us on the web:
www.climatexl.org



Biomimicry and climate change. *Continued from page 4*

Climate change has been happening since time immemorial. The universe is in a state of dynamic non-equilibrium as nature applies corrective, adaptive and mitigatory measures after every natural disturbance, including climate change.

During one of my "Biomimicry and Climate Change" presentations I was interrupted by a member of the audience who wanted to know why we should bother with climate change if nature is self healing. He argued that since humans are part of nature we have every right to do whatever we want and nature will fix it. Somehow, he ignored his own line of thought, which by implication, means as part of nature humans have a role to play in fixing nature's imbalances.

It took a trip to town and back to convince him that Homo sapiens are a young species which has been in existence for a relatively

short period compared to most other organisms. However, in the short period we have been in existence we have engaged in unsustainable practices, enough to accelerate global warming and consequently the rate of climate change beyond nature's capacity to effect self healing measures.

Let's consider buildings for example. Unlike nature, which builds using a subset of few elements that, after their useful life, can be broken into benign materials that are fully recycled; humans tend to build using a myriad of non biodegradable and non recyclable materials. Instead of constructing with future deconstruction in mind we end up with buildings that require explosives to implode the reinforced concrete into rubble.

Even the cement production process is one of the worst emitters of carbon dioxide, the primary greenhouse gas responsible for global warm-

ing along with other pollutants. Production of one ton of cement results in the emission of roughly one ton of CO₂ and in some cases much more. Cement production is the third largest source of greenhouse gas pollution in the U.S., according to the U.S. Environmental Protection Agency. It is not until recently that we have seen innovative processes such as the one used by Calera, a USA based company that apparently can use up to 90 % of the carbon dioxide emitted by a power plant as a raw material for the production of cement. The transportation of cement, a high density product, results in additional consumption of non renewable fossil fuels.

Still with buildings, in the USA energy consumption associated with buildings is of the order of 40% of total energy consumption. Meanwhile nature has long figured out a way to use freely available energy. For example, termites maintain their mounds at fairly constant temperature without air conditioning. The Eastgate Centre in Harare, Zimbabwe is one of a few commercial shopping and office complexes which do not rely on conventional air conditioning, instead using passive energy in a way mimicking the way termites do it.

If everybody built with a "construct to deconstruct" or "build to recycle" approach and used renewable energy like nature, essentially employing biomimicry principles, we could slow down climate change through use of environmentally friendly and sustainable products and processes.

Gamelihle Sibanda is a Civil Engineer and Biomimicry practitioner who is currently part of the Biomimicry Professional Certification Programme under the auspices of the USA based Biomimicry 3.8 (formerly Biomimicry Institute and Biomimicry Guild). He is also a Non-Executive Director of Climate XL Inc. He can be contacted at gama@biomimicrypro.com or sibanda@climatexl.org.