

THE FUTURE OF **AFRICAN** FOOD SECURITY

Seeking solutions to nourish
nations in the face of climatic and
developmental uncertainty



IN
ON AFRICA

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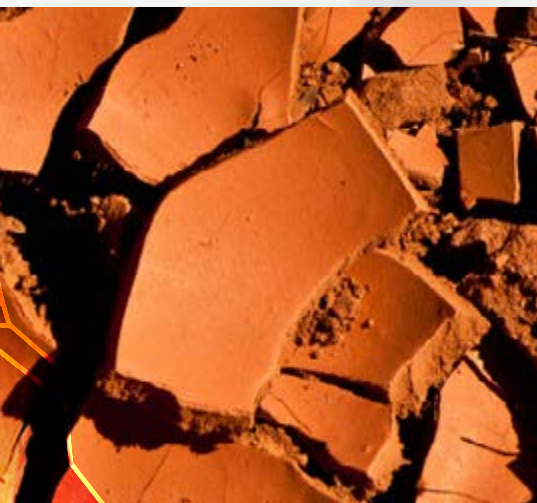


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THE STATUS OF AFRICAN FOOD

Southern Africa's drought prompts policy review

Food security on the African continent remains an apparent issue however not all components of the problem can be quantified and human behaviour, being hard to predict, is always a large barrier to the implementation of solutions.

Focusing on Sub-Saharan Africa, a reported 233 million people in the region were considered undernourished for the period of 2014-16 – a higher concentration of hunger than any other area of the world, according to the United Nation's Food and Agriculture Organisation (FAO).



A woman prepares maize inside her home in Chimteka, Malawi.

Photo courtesy Kate Holt/Department of Foreign Affairs and Trade (Australia)/Flickr

The lack of food provisions to this region is a problem that is neither localised nor short-lived. Although the region will again see rains and another harvest will come to fruition, permanent damage is done to both economies and populations, even in the space of six months.

Not only do nations suffer intense losses to their GDP through malnutrition (Ghana losing approximately US\$ 2.6 billion p.a.), serious health deficiencies come into play.

Physical stunting, a continent-wide affliction, results in underdeveloped bodies, brains, and immune systems – developmentally, the first 1000 days of a child's life are the most important and being starved of nutrition



SECURITY:

during this phase will hamper the individual throughout their life.

The African Development Bank (AfDB) president, Akinwumi Adesina, has acknowledged the nutrition deficit and claims that “stunted children today lead to stunted economies tomorrow”.

“Developmentally, the first 1000 days of a child’s life are the most important and being starved of nutrition during this phase will hamper the individual throughout their life”

With the world seeing record-high temperatures and the effects of the Sub-Saharan drought in full force, adapting best practices in agriculture is foundational to realising the vast potential of Africa’s agriculture industry.

The severity of the conditions also creates a playing field that demands excellence in production, storage, and distribution – the use of water also being inextricable from food production.

New water-saving technologies are also being developed to improve water shortage and a greater focus is being placed on desalination with pioneering cities, like Algiers, that purify over 200 million litres of seawater a day.



Girls collect water from a bore hole in Eastern Equatoria, South Sudan. Underpinning all food production is access to water.

Photo courtesy Arsenie Coseac/Flickr

There is evidence of a possibility of a new African revolution – a green one. It is no secret that African farmlands are being eyed as potential investments for agri-companies. With 80% of the world's land that is suitable for agriculture already in use, according to the FAO, space to grow is becoming a more valuable commodity. The lands of smallholders that support one or two families will undoubtedly be incorporated into larger growing schemes and hopefully these reforms are equitable and beneficial for the local populations, conducted in conjunction with environmental preservation, and result in overall hunger alleviation.

The drought of 2016 has certainly underlined the need for a robust food production and distribution system. The region saw a markedly dry period, induced by El Niño, and subsequent flood warnings have been issued for the La Niña climatic conditions that typically follow.

Although persistent issues underlying food security in Southern Africa have been exacerbated by the region's recent drought, hope can be found in new technologies being implemented, with positive results elsewhere in Africa. Adapting similar innovative practices within Southern Africa could strengthen regional food security and mitigate social problems borne by rising hunger levels in the fallout of drought.

With these challenges in mind, In On Africa asked some of its expert consultants in the field of agriculture and water preservation to discuss the future of African agriculture.



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Enabling small-scale growers to gain better access to markets to sell their goods is an effective way to make food more available in local contexts and boost sellers' incomes.



*Above: Freshly caught fish along Lake Malawi.
Below: Bananas at a market in Pembe,
Mozambique. Photos courtesy James Verster/
Flickr; Tom Rulkens/Flickr*



IOA EXPERTS JOIN THE FOOD SECURITY DEBATE



Sarah Kiggundu has been a researcher and writer with IOA since 2011. She is a civil engineer with a master's degree from the University of Cape Town (UCT) and her work with IOA focuses on matters pertaining to environmental integrity, water resources, and sustainability.



Abraham Makano has more than 20 years of industry experience in various sectors of the economy, from forestry to manufacturing. He has worked in both the public and private sectors. He holds an MBA and a postgraduate certificate in Project Management from the Keller Graduate School of Management, a part of the DeVry University, USA; a professional degree in Marketing from the Chartered Institute of Marketing, UK; a diploma in Marketing and Project Management; and a diploma in Forestry from Zambia Forestry College, amongst others.



Dr Richard Meissner is a Senior Researcher in the Natural Resources and Environment Unit at the CSIR. He holds a Doctoral Degree in International Politics from the University of Pretoria. Richard specialises in the analysis of transboundary river basins, focusing on the complexities and interactions between and among non-state actors, international organisations, and state/government organs. Richard is currently the project manager of the CSIR's water security project.

IOA Q&A | The El Niño-induced drought seen in Africa in 2015-2016 has undoubtedly prompted concerns over how future climate change will create problems for food provision, both in Africa and elsewhere. Are there countries that are creating contingency plans for expected food shortages and would you say the market is in a position for expansion or is it consolidating its losses?



Sarah Kiggundu – The El Niño weather event has affected agricultural productivity and food security on a global scale. In Southern Africa, the climatic effects associated with El Niño

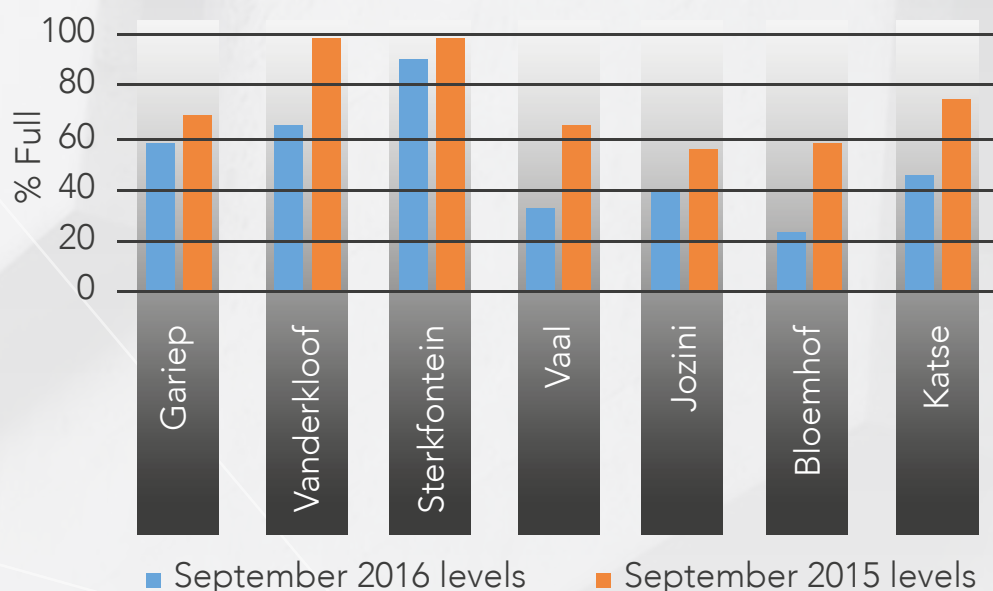
have caused what is widely believed to be the worst drought on the continent in 35 years. Agriculture is seen as a key driver of economic growth in Southern Africa therefore it is imperative to develop policies and strategies that are resilient, in order to safeguard agriculture-based activities. The Southern African Development Community (SADC) region is attempting to mitigate the impacts of drought on its people and its economies, and I believe the markets will recover from these shocks in time.

African states have, in one way or another, shown preparedness and mindfulness for the implications of climate change, although surely more can be done. Not just regarding the immediate effects but the long-term effects on the welfare of the population, food security, and the overall well-being of their respective economies.

The humanitarian impact of climate change also extends beyond the issue of food security. The El Niño effects are projected to lead to, for example, increased levels of malnutrition and an increase in the transmission of communicable diseases. Southern Africa, in particular, is a region where 70% of the population is dependent on agriculture for sustenance and as a source of employment.

This ultimately means that with any drop in food production, poverty levels are expected to rise, something counterproductive to much of the developmental progress that has been made in recent years.

2015/2016 water levels of 7 largest dams in South Africa. The water levels in all seven of South Africa's largest dams declined in 2016. Graph designed by IOA and data sourced from South African Department of Water Affairs & Forestry



Abraham Makano – In Zambia, with the help of the World Bank, the government established a multi-ministerial secretariat that will tackle

climate change issues. Other sectors, such as agriculture, forestry, livestock, and development, are all engaged in promoting climate smart strategies.

Some of the strategies are conservation farming, promoting drip irrigation, planting drought-resistant crops, and promoting that herders switch to more resilient livestock, such as goats. Beyond technical prescriptions from technocrats, these strategies also serve to keep farmers up to date with changes in the market.

This bolsters their capability of maintaining their incomes in the short-term, as they mitigate spoilage and waste, as well as in the long-term, since they will be able to readily adapt to environmental changes.

This is essential, since obviously the African food market will continue to expand with population growth, given food is essential for human survival.



A farmer in Somaliland tends to one of his few remaining goats after the majority died in from lack of water during a drought in 2012. Photo courtesy Oxfam East Africa/Wikimedia Commons



Richard Meissner – I would say that there is vast potential for expanding agricultural land and production, even in light of water shortages. I remember

that 10 years ago, Zambia created an enabling environment for small-scale farmers to produce food and sell the surplus. Before then, Zambia experienced food shortages but now it seems as if that problem had been resolved.

Even so, when Southern Africa gets hit by drought, countries usually react by appealing for aid. In July 2016, Botswana's President, Ian Khama, who is also currently Chair of the Southern African Development Community (SADC), appealed for US\$ 2.7 billion in drought-aid.

In my opinion, countries fall back on this type of appeal when there are food shortages but don't put much effort into forward-planning to deal with food shortages internally, like improving crop production per drop of water. The country that has been at the forefront of creating more crop per drop has been South Africa, whose agricultural sector is implementing sophisticated water saving techniques and technologies. However, that being said, South Africa's preparedness for the current drought was not stellar at all.



Botswana's President, Ian Khama. The effects of Southern Africa's 2015/2016 drought led Khama to declare a state of emergency in Botswana in July 2016.

Photo courtesy UK Foreign and Commonwealth Office/Flickr



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CONSULTING

IOA's Consulting Division houses the firm's core service offerings: specialised Africa-focused research and analysis to inform decision-making on the continent.

IOA clients typically entrust us with the following tailored research requirements:

- commercial landscape analyses
- feasibility studies
- brand strength and equity studies
- market and consumer research
- geopolitical analyses
- risk analyses
- due diligence investigations
- social research
- custom-made report series



Position your company as a thought leader in Africa with IOA's Content Marketing service offerings.

IOA's Content Marketing Division provides a range of services to clients that strengthen their position as a leader in the African market, as well as enhancing their service to better meet the needs of their clients. Services include, but are not limited to, the production of Africa-related reports, briefs, position papers, newsletters and website content.

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- ghost writing
- social media content development



IOA's Publishing Division is spearheaded by the Africa Conflict Monitor (ACM), which is released monthly and analyses conflict-related developments and trends across the African continent.

IOA also publishes once-off and annual reports on a wide range of topics, such as the firm's Africa Country Benchmark Report (ACBR) that is released at the start of each year.

In addition, IOA releases occasional thought-leadership papers to better inform its readers on key developments across the continent.

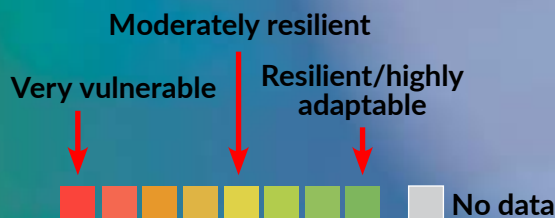
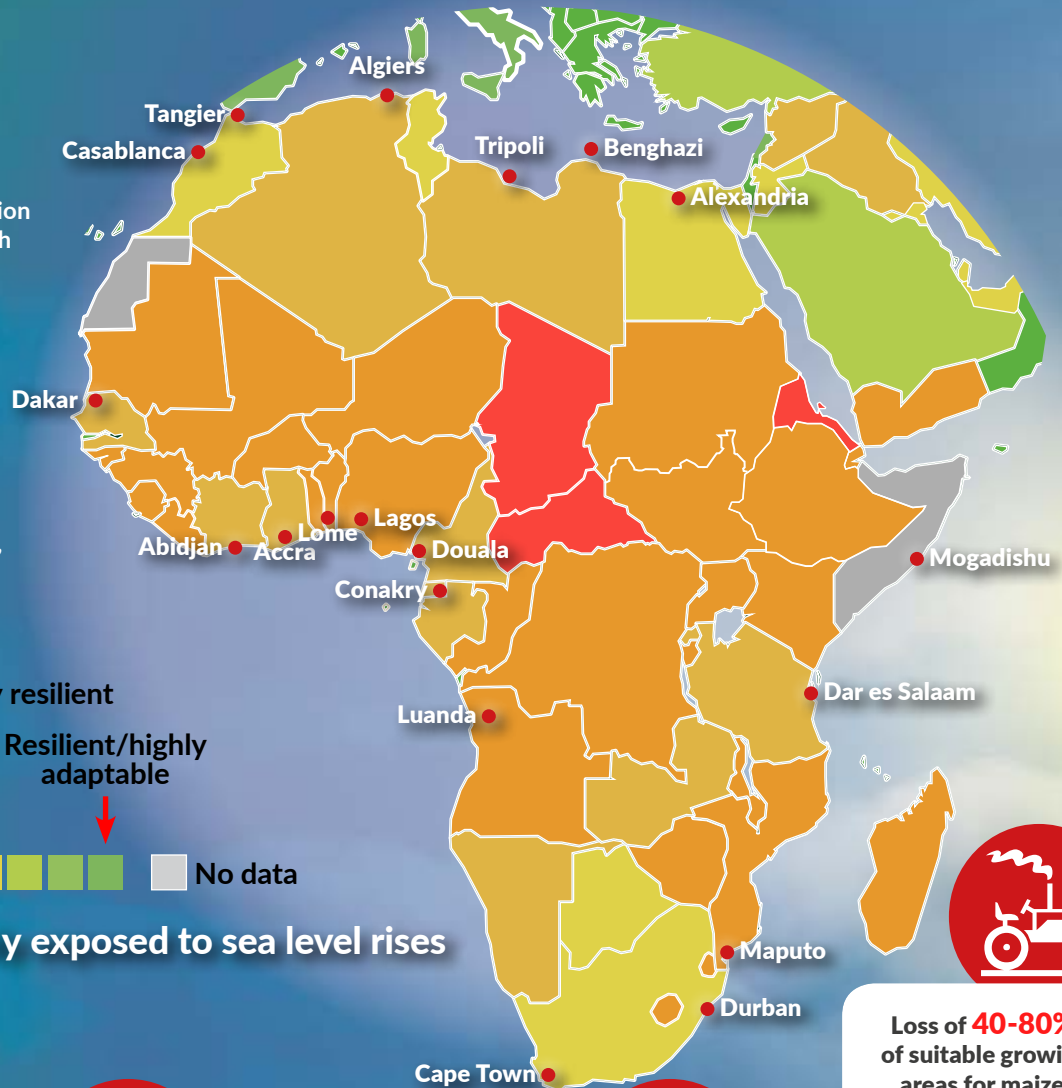
AFRICAN VULNERABILITIES TO CLIMATE CHANGE

More so than any other continent, African populations are at risk of adverse consequences of climate change. If mitigation measures are not both widespread and adopted quickly, much of the continent will experience devastating droughts, floods and heat waves that will plunge tens of millions into poverty and render large swathes of territory unusable and uninhabitable.



African rankings in the University of Notre Dame's Global Adaptation Index (ND-GAIN), which evaluates a country's vulnerability to climate change and its related effects in combination with a nation's ability and demonstrated readiness to adopt resilience measures.

*Mauritius, the African country most prepared, is ranked 49th globally



● Major cities highly exposed to sea level rises



Loss of **40-80%** of suitable growing areas for maize, millet and sorghum



If warming exceeds 3 degrees celsius: **75%** of land area will be hit by extreme heat waves and 18 million people displaced annually by flooding



Lower crop yields and higher food prices could push an additional **43 million** Africans into poverty by 2030

Climate change risks



Upwards of a **50%** reduction in fish stocks near West Africa by mid-century



Annual cost of current climate change adaptation in Africa = **US\$ 5-10 billion**; cost by mid-century for 2 degrees warming = **US\$ 25-50 billion**; cost for 4 degrees warming = **US\$ 100 billion**

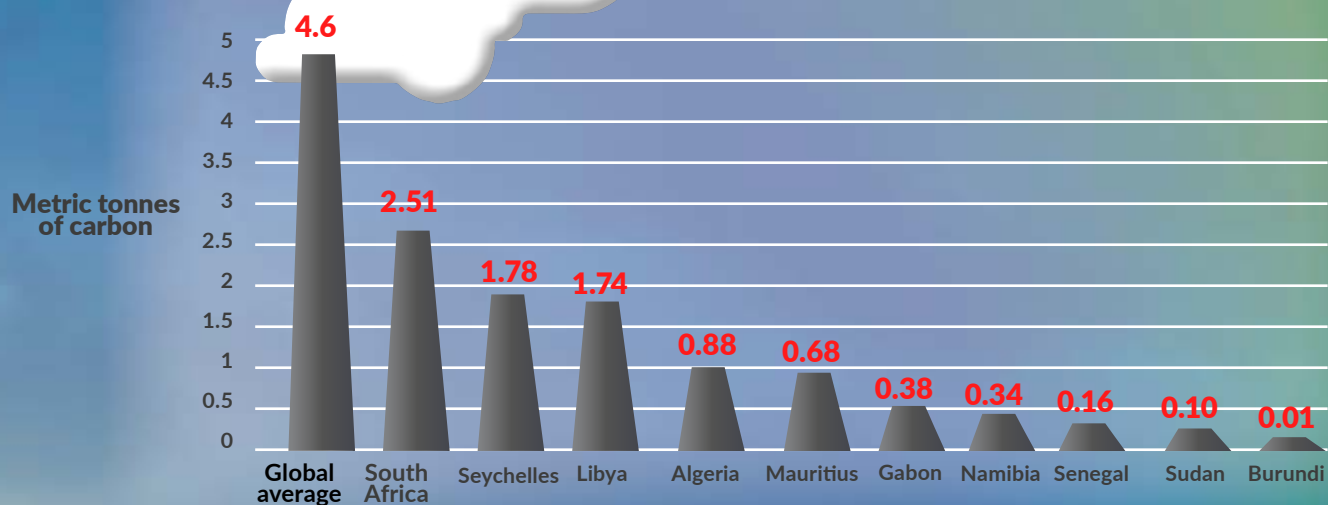


An increase of between **15-65%** in levels of malnourishment



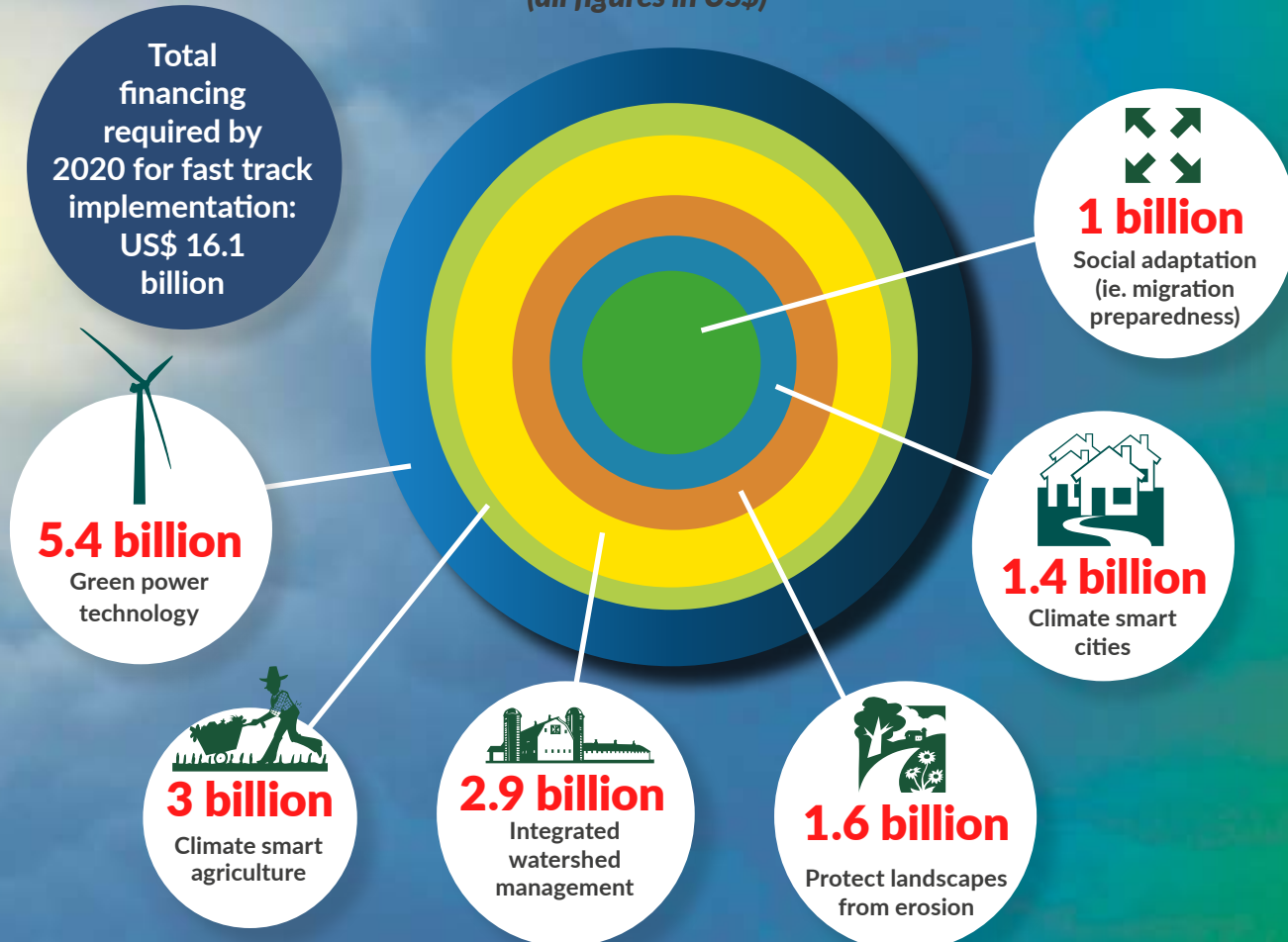
More frequent droughts will affect **40 million** people relying on livestock for their livelihood

Africa: fossil fuel emissions *per capita*, largest to smallest



World Bank's Africa Climate Business Plan

(all figures in US\$)



Implementation goals by 2023

- 10 million farmers adopt climate smart agriculture practices
- 1 gigawatt (GW) of grid-connected solar power being generated
- 5 million off-grid consumers provided access to modern energy services
- 420 megawatts (MW) of clean, low-cost hydropower in West Africa
- 150 MW of geothermal energy being generated



ORGANISATIONS ON THE FRONT LINE OF THE FOOD SECURITY BATTLE

Women sort coffee beans in a warehouse in Addis Ababa. The preference of business and government in many African countries to produce cash crops in favour of consumables can negatively impact the sustenance of local populations.

Photo courtesy UK Department for International Development (DFID)/Flickr



The number of organisations involved in the search for a solution to food insecurity gives testament to the complexity of the food security issue and the diversity of its causes and potential solutions. Africa plays host to many associations whose focus is to find solutions to the problem of hunger amongst rural inhabitants. Some play the role of food-funders while others are actively involved in research, infrastructural development, and advocacy for those feeling the effects of the shortage. African nations bear the brunt of agricultural export taking precedence over the provision of food for local inhabitants. A comparison between revenues generated from exports (specifically agriculture) and the cost of lifting national populations out of poverty is presented in the infographic on page 20. Not only would the amounts generated from exports fund nutrition but it would allow all citizens their allotment of basic service requirements, quantified by the FAO's estimate of US\$ 1.75 per-person, per day. If governments directed greater resources towards small-scale farmers, rather than cash crop development, the quality of life for rural inhabitants would improve, through increased access to basic services and greater capacity for subsistence food generation.

The associations involved in these relief efforts are also sometimes the victims of the commercial mentality of prioritising profits over living standards. Their charters often contain caveats that allow governing bodies to decide which agricultural entities will reap the benefit of an expanding industry in Africa. It is this central concept of industry monopolisation that really drives these movements and the advertised principle of saving populations from starvation remains mostly as a philanthropic entry point. A short analysis follows that highlights a few key bodies and initiatives that have arisen due to this ongoing crisis:

ORGANISATION	SUMMARY
African Development Bank (AfDB) 	In August 2016, the AfDB pledged large investments into the industry of agriculture and related processing and logistical requirements, focusing on infrastructure and power generation and distribution. The AfDB is also reportedly working on plans to develop palm oil production in West Africa. AfDB will also offer small-scale loans to farmers, based on the production of the country. This extends AfDB's financial reach into Africa and will enable producers to be able to afford much needed inputs.
Grow Africa 	The overarching goal is to increase agricultural output and subsequent growth through the development of production and supply chains. The alleviation of poverty and hunger are not listed as direct objectives of the developments, but the belief is that these will be associated benefits of industrialisation.
Feed the Future 	Feed the Future is active in 19 countries, 12 of which are African. It focuses largely on agricultural productivity, nutrition services, and market access. As of 2015, over 9 million people had felt the influence of this program through the US government's recommendations and management. Over 1300 individuals have been trained through the programme. Sales of \$1 billion recorded for 2015 from Feed the Future related endeavours. 2959 health facilities had been established by 2015. Over 17 million contacts were made to treat children under the age of 5 for malnutrition.
CGIAR 	CGIAR conducts continual research in three basic categories, namely crop, water use for harvest, increased micronutrient constituency of crops and genetics. “Even the most conservative estimate of the measurable benefits of research indicate US\$ 2 in benefits for every US\$ 1 invested”. Assisted in the development of the largest seed bank in the world, owned and managed by a combination of the biggest agribusinesses.
Agricultural Research Council 	Lesser known body on an international scale, Agricultural Research Council is based in Pretoria, South Africa and the organisation conducts various fields, namely, capacity building, animal sciences, crop sciences, and the industry. They have developed growing guides for small and large-scale estates along with devices and management techniques to assist with soil conservation, etc. Their directive is to be the “go-to” consultant for South African agriculture including the evaluation of genetic modifications.

	FUNDING DETAILS AND GOVERNANCE
ustrialisation of used on road and sugar profile of their mpower small	- US\$ 24 billion over 10 years. - AfDB funds are derived from subscriptions by member countries – including specifically non-regional member countries – and borrowings on international markets and loan repayments. 50% of the countries in the Top 10 of overall voting power at the AfDB are non-African
quent economic atives of these its to the	- Utilize US\$ 1.5 billion of the US\$ 10 billion that has been pledged through letters of intent (These are not legally binding, but do allow membership as a private entity). - Jointly controlled and led by the African Union and the World Economic Forum, by way of a Leadership Council that also controls the New Alliance for Food Security and Nutrition. - As of 2014, 4 of the 28 members of the leadership council were African countries (although the Terms of Reference stipulated 8 nations plus NEPAD) and another 4 were considered agencies representing the workforce. The remaining 20 bodies are a combination of private companies, partnered countries, and multinational organisations, like the International Finance Corporation.
The focus is expansion. programme practices. Only of US\$ 2.28 s. age of 5 with	- Direct initiative of the US government, and funded by the Global Agriculture and Food Security Programme, which is also chaired by the US government with the World Bank as trustee. - Governors of the programme, and the program itself are linked to Monsanto and PepsiCo through share-investment and funding. - As at August 2015, US\$ 1.38 billion had been received from US\$ 1.5 billion in pledges.
ely, reduced ops, and crop of CGIAR d, currently es.	- Governed by the Fund Council that administers the CGIAR fund. Fund Council members are a combination of donor countries, organisations, etc., including some of the same members as Feed the Future, connected to the agribusinesses (e.g. Gates Foundation). - Collected and disbursed over US\$2 billion through donors and subsequent research programmes. - Top donors in 2014 (US\$) millions: United Kingdom (65.46), Netherlands (53.32) and Bill and Melinda Gates Foundation (35.59).
h Council work in many innovations in ablishments, erosion, water griculture,	Two-level governance system: - The Executive Management, where the B-BEEE requirements are met through a board of 8. - The Council that is a combination of 14 professors and doctors in their respective fields

IOA Q&A | There have been many studies showing that well-developed agriculture schemes can have a great impact on lifting local populations out of poverty and increasing food security. However, with Ethiopia's coffee exports as an example, why do countries not prioritise the sustenance of local populations over producing cash crops for export? What kind of policies and/or incentives are helpful in reversing this situation?



Sarah Kiggundu – In 2006, the Alliance for a Green Revolution in Africa (AGRA) was launched by the Bill and Melinda Gates Foundation and

The Rockefeller Foundation (TRF) – it has been spearheading the Green Revolution in Africa, which is now African-led. Public and Private sector investment is vital to promoting the Green Revolution on the continent, which is to be centred around smallholder producers and 'agri-preneurs' in Africa.

AGRA challenges conventional farming mechanisms and encourages economic incentives to agricultural production. It also addresses issues such as smallholder financing, soil fertility, and access to markets. Since there is a need to embrace the vast potential that the agricultural sector can play in economic growth, it is equally important to inform smallholders about new developments and techniques in farming, specific to their geographical location. There are, for example, a variety of seeds and

fertilisers that have been developed and have proven successful in yielding higher crop harvests. As these smallholders are able to yield more harvest, it is also necessary to improve access to markets, in order to change surplus produce into money.



A coffee farmer in Ethiopia uses his mobile phone to check the latest market prices on Ethiopia's Commodity Exchange. Mobile connectivity has had a great benefit for growers in remote areas, allowing them to check market prices, weather patterns, arrange transport for their goods, transfer money, and purchase seed.

Photo courtesy UK Department for International Development (DFID)/Flickr



Abraham Makano – The reason for promoting cash crops is that a rural population does not only need to survive but also invest in the future through educating their children, which requires money to pay for healthcare bills, clothing, shelter, and other essentials.

These will require cash, not always obtainable through barter systems. In addition, promotion of cash crops contributes to the improvement of one's quality of life.

Policies that need to be developed should focus on improving the quality of life of rural communities. Rural farmers should be enabled to meet other living requirements beyond food security, including the generation of revenue for investment in the growth of the farming enterprise, thus emphasising farming as a business instead of subsistence only.

“Policies that need to be developed should focus on improving the quality of life of the rural community, enabling the rural farmer to meet other life requirements beyond food security.”



Richard Meissner – I think that this is a generalisation. South Africa is very good at producing food for the local population, especially

considering maize. However, we need to remember that farming is a business and profits and foreign exchange generation provide the type of incentive that gives preference to production of cash crops over local population's nutritional needs.

One policy that could work well to help alleviate this is to stimulate more intense subsistence agricultural production through fertilizer subsidies, supplying seed to small-scale farmers, and the introduction or revitalisation of defunct irrigation schemes in rural areas. Such a government and private sector driven policy could go a long way in increasing food security.

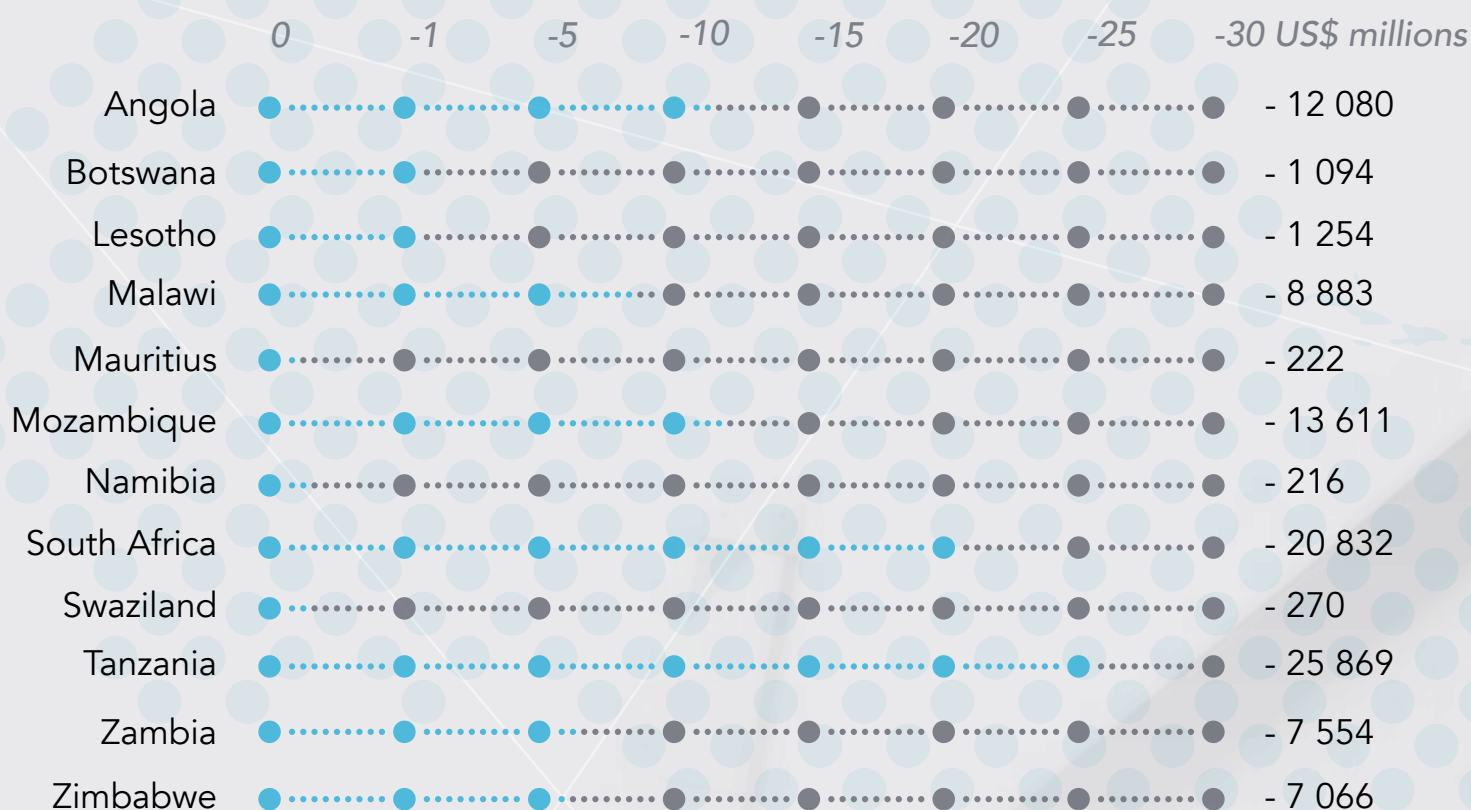
I think government intervention is necessary at the emerging and subsistence farmer level, since commercial agriculture schemes are usually profit-driven and could ignore subsistence farmers that do not produce enough for the market to warrant engagement.



Opening remarks at the African Growth and Opportunity Act (AGOA) meeting at the World Bank in Washington, D.C., 4 August 2014. First enacted in 2000 and currently in place until 2025, AGOA provides tariff-free access to US markets for African countries, with a growing portion of that trade involving horticulture and agriculture.

Photo courtesy U.S. Department of State/Flickr

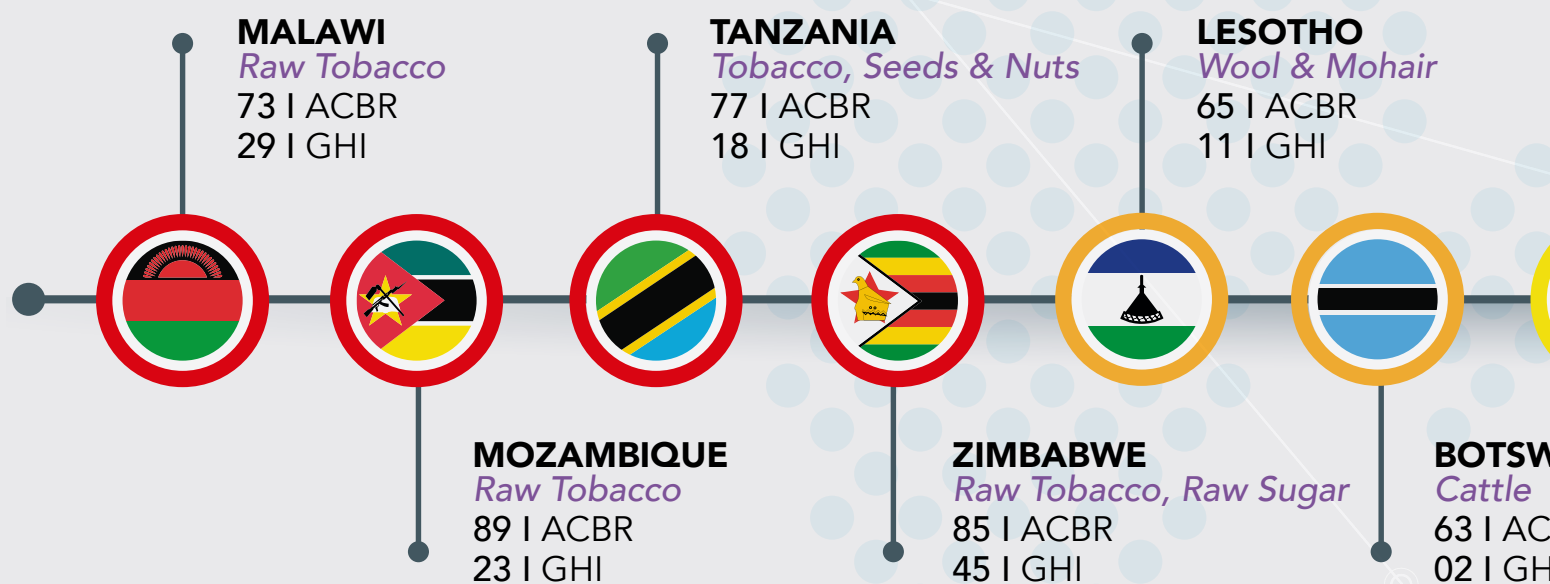
SHORTFALL IN COST OF ELIMINATING ALL POVERTY BASED ON CURRENT AGRICULTURE PRODUCTION



* US\$ 1.75 per person, per day is to lift individuals out of poverty, not just feed them, according to the UN Food and Agriculture Organisation (FAO)

ABILITY TO ELIMINATE POVERTY VIA REVENUE AVAILABLE FROM CURRENT LEVEL OF FOOD EXPORTS

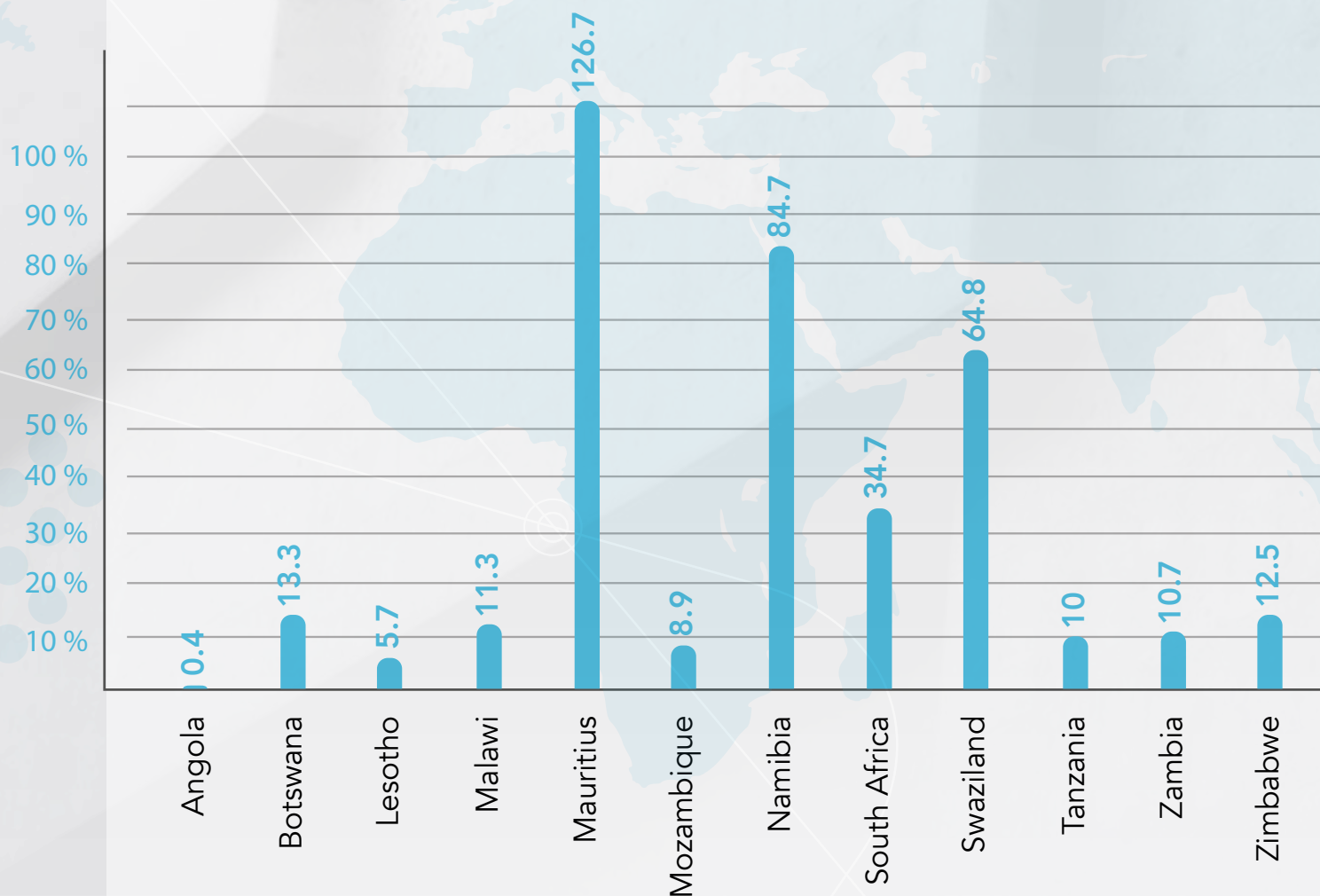
African Ranking



DIFFICULT

SOMEWHAT POSSIBLE

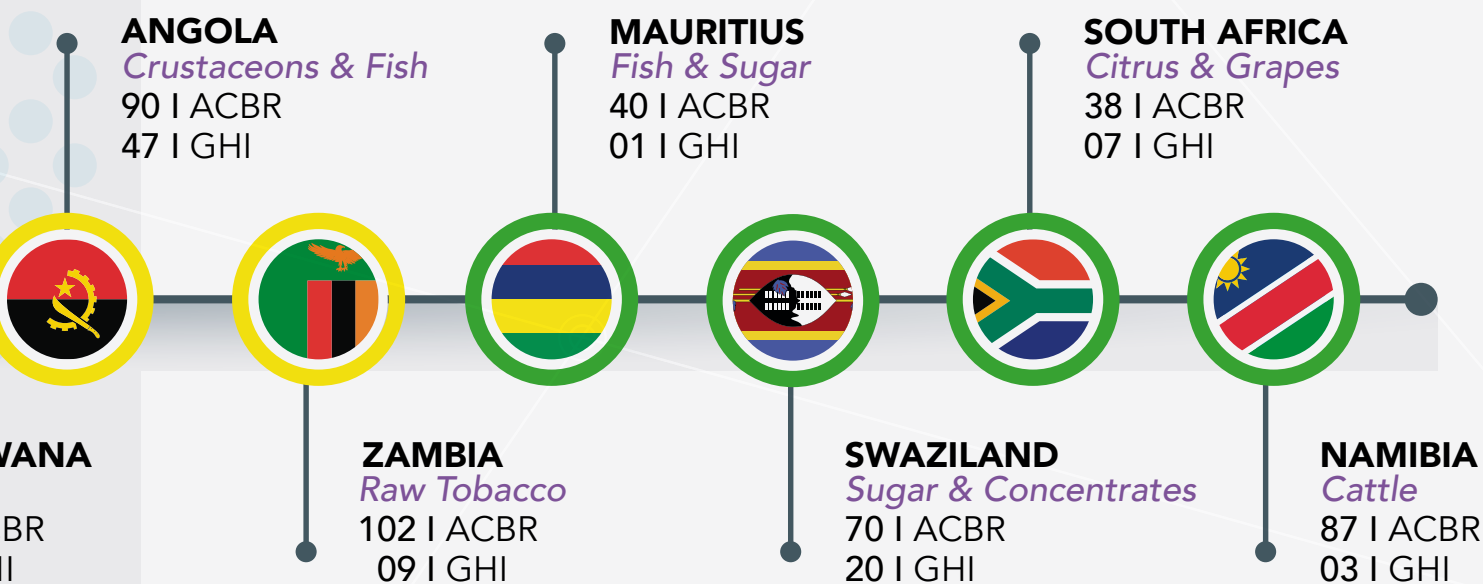
POVERTY ELIMINATION COST POTENTIALLY COVERED BY CURRENT AGRICULTURE EXPORTS



Country Benchmark Report(ACBR)
(Out of 54 African Countries)

Global Hunger Index (GHI)
2015 Ranking (Out of 104 Countries)

● Main Food export



POSSIBLE

ACHIEVABLE ➕

SUSTAINABLE FARMING

While it is evident Africa needs to provide its populations with reliable food sources, strong consideration needs to be given to the methods of its acquisition. Although subsistence farming is dominant in Africa, a more streamlined and institutionalised approach might be what prevents food shortages, like the one being experienced in 2016. The agricultural practices chosen now to develop the continent going forward will establish long-standing principles that might solve immediate problems but could result in even greater levels of food insecurity in the future.



Switching to drought resistant livestock that more efficiently turn feed into protein, such as chickens, will help reduce the amount of food diverted away from human consumption.

Image courtesy Surian Soosay/Flickr

The industrial approach to agriculture, while producing enormous volumes of food, has left its mark on the environment and populations. The artificially produced nitrogen, phosphorous, and potassium contained in commercial fertilisers that are used in commercial agriculture have proven too much for the natural ecosystem to process. These accumulated elements eventually collect in the water table, often registering concentrations above the recommended safe levels for drinking. The water in these regions become hypoxic;

this oxygen-deficiency results in very little marine life being able to support their life cycles in areas with such intense concentrations of man-made toxins.

“The industrial approach to agriculture, while producing enormous volumes of food, has left its mark on the environment and populations.”

The Rodale Institute in Pennsylvania has run comparative experiments since 1981, between natural/organic fertilisation methods and modern chemical approaches. While the initial yields proved higher for conventional methods, the organic solutions were able to match yields after a period of time and generally have levels of water retention between 15-20% higher – especially useful when dealing with drought conditions.

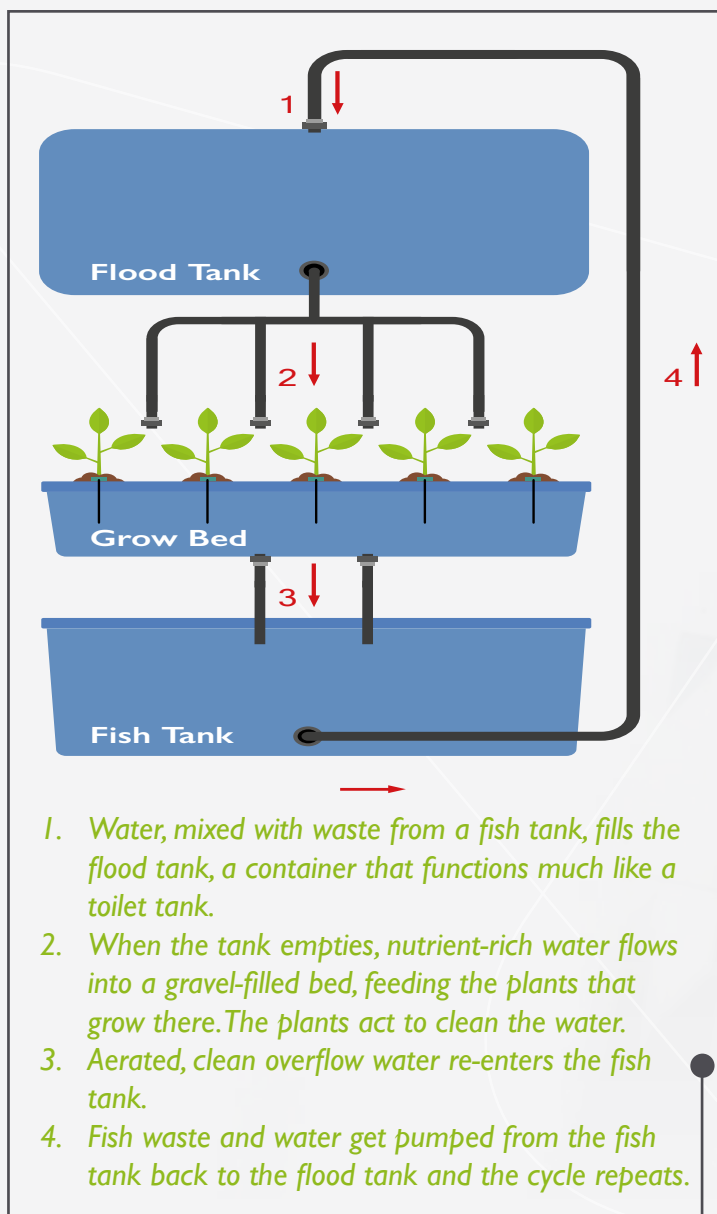
Other benefits include the prevention of dead zones, areas of soil in which organisms cannot thrive due to a lack of oxygen, and an arguably more nutritious product.

Headway is also being seen in the production of crops that involve the complete control of atmospheric, nutritive, and lighting inputs. Facilities around the world are being developed to grow and regularly produce large volumes of staple vegetables. Of interest to Africa is Japan's conversion of factories, now able to churn out 10,000 heads of lettuce a day. This vertical farming has also been taken into the Middle East, where Qatar is attempting to employ the technology in an effort to create an agricultural industry in the otherwise dry and import-prone region. This kind of efficiency is achieved by isolating the harvest in a controlled soilless environment, and providing all required nutrients in an aqueous solution. Further developments are also being made into aquaponic adaptations, where plants and fish stock can be cultivated within the same system; by using the natural water-cleaning tendencies of plants in conjunction with the enrichment of fish waste, where it acts as an organic fertiliser. An African village with a few of these easy-to-maintain systems could achieve dependably bountiful yields, especially in times of drought and food shortage.

A farmer in Kenya irrigates his crops. Organic farming methods have been proven to boost water retention by 15-20% compared to industrial methods. Photo courtesy Neil Palmer/ International Centre for Tropical Agriculture (CIAT)/Flickr



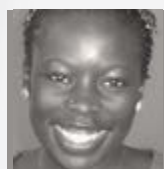
The basis of an Aquaponics system.



Aquaponics is an inventive form of closed-system agriculture, which combines hydroponics and aquaculture, forming a water-based gardening and fish cultivation system. Image designed by IOA with data sourced from Travis W. Hughey

Other adaptation strategies include modifying plant genetics, and is exemplified by the drought resistant and high-in-iron beans that have been sustainably developed and distributed in Uganda to directly combat anaemia in women. Ethiopia too has seen successes in their testing of Camelina beans that provide heightened Omega-3 oils and astaxanthin, which is considered a food additive for aquaculture.

IOA Experts | How much are new technologies in the field of agriculture – such as the recent expansion into controlled indoor growth – relevant to the African continent, especially considering that most nations' agricultural infrastructure is typically deficient in comparison to those from more developed regions? What are some of the new developments that really hold promise for a developing nation?



Sarah Kiggundu –

According to the International Food Policy Research

Institute, the world must to be able to increase its food

production using less resources to cater to a growing global population therefore new technologies and green technologies have an undeniable role to play in developing the agricultural sector in Africa. Roughly two-thirds of the African continent lives in rural areas and it is these people who are overwhelmingly dependent on agriculture as a livelihood. Low-level productivity can be attributed to a number of factors – soil fertility, insufficient or unreliable water supplies, small parcels of land for farming, poor access to markets, and/or inadequate transport infrastructure. The UN's Food and Agriculture Organisation asserts that the Green Revolution draws on the best technologies that have proven to increase production. The following methods can be used: crop varieties that can endure adverse climatic conditions, crop rotation, integrated crop/livestock management to sustain soil fertility, and seed saving for self-sufficiency.



A scientist works in a laboratory at the International Livestock Research Institute in Nairobi, Kenya. Investigation in the research and development in agricultural sciences will be vital for African nations to adapt to the effects of climate change. Photo courtesy Kate Holt/Africa Practice/Flickr



Abraham Makano – Indoor growth or controlled-growth operations are not necessary for Africa. The continent

does not suffer a shortage of fertile, arable land which is suited for agriculture, given the continent's climate, exposure to sunlight, accessibility to water, and potential for renewable energy. What needs to be done is to develop and implement appropriate technologies that can harness Africa's relative advantages in agriculture that are already present, rather than expending large amounts of resources to construct artificial growth environments whose technology is likely to be based on designs calibrated for very different regions.



Richard Meissner – I think it is very relevant. I see a lot of farmers that produce citrus and table grapes under shade

nets to reduce wind damage, excessive evaporation/transpiration, and the control of pests. Also, because of Africa's harsh climatic conditions, the continent is, in my opinion, well suited for drip and

sprinkler irrigation. Commercial farmers in South Africa also do sophisticated irrigation scheduling, based on soil-moisture measurements. Much of the promise in integrating new methods and technology lies in the field of irrigation, since many useful technologies, in that regard, remain inexpensive.

“ Much of the promise in integrating new methods and technology lies in the field of irrigation, since many useful technologies, in that regard, remain inexpensive. ”



Crops grown under a shade net in South Africa. Photo courtesy Richard Meissner



A WASTE OF RESOURCES, FOOD,

Southern Africa's drought prompts policy review

Current levels of food waste and loss are unsustainable, not only diminishing the already strained food supply but contributing to landfill congestion and, upon decomposition, generating methane, an unwanted greenhouse gas.

In addition to the wastage of food, resources such as water and electricity required for the production of food are unnecessarily expended and avoidable emissions are released into the environment. At a time when food security is of paramount importance to the survival of millions across the African continent, all avenues of improving food production and distribution in the face of drought and climatic uncertainty need to be explored.

Once such avenue pertains to the ways in which food waste and food loss can be curbed. According to the 2011 (FAO) report on global food losses and food

waste, more than a third of all fresh produce is wasted globally by the time it reaches the packaging or processing phases. The importance of reducing food loss and wastage is supported by the UN's target of halving food loss by 2030 as one of their Sustainable Development Goals (SDGs).

There is a difference in meaning between 'food loss' and 'food waste' and the distinction must be drawn between the two: 'Food loss' refers to food which has to be discarded post-harvest, between the time it was harvested to the time just before it reaches the consumer.

'Food waste' refers to food which is thrown away or left to spoil after purchase by the consumer. In developing countries, food loss is more prevalent. In such countries, fresh produce in particular is rejected due to damage during transportation en route to market or spoiling due to improper storage.



OPPORTUNITY



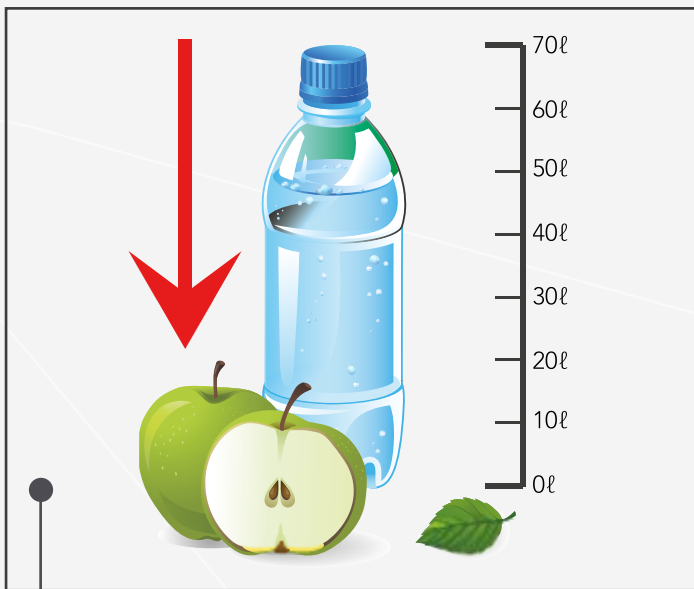
This is often the case where grain becomes infested with insects, rendering it unusable.

A woman displays vegetables she has grown in the Abalama Bezehkaya garden in the township of Gugulethu, Cape Town.

Photos courtesy Kate Holt/Australia Department of Foreign Affairs and Trade/Flickr

Annually, in developed nations, food waste is estimated at 95-115 kg per capita in comparison to Sub Saharan Africa which comes in at 6-11 kg per capita.

Food is wasted for numerous reasons, which include high selection standards (where only produce of a specific size and shape is accepted while the 'imperfect' produce gets discarded), inefficient co-ordination in the supply chain, and consumer behaviour, i.e. disregard for best-before-dates.



When an apple is lost or wasted, 70 litres of water used for its production go wasted as well. Data source: UN Food and Agriculture Organisation (FAO)

In a study conducted by the FAO on the Near East and North Africa (NENA) region, it was found that the highest average levels of food waste globally occur in the NENA region, with an average of 250 kg of food per person lost every year. The loss experienced is as a result of poor harvesting, storage and transportation techniques, inefficient policy and regulation, and can also be seen throughout other regions in Africa. Key causes of waste include improper storage and over supply on special occasions, such as religious holidays or weddings. Initiatives like YieldWise, spearheaded by TRF, are aimed at equipping farmers with improved storage technologies, like stainless steel grain silos and hermetic cocoons, in countries such as Kenya, Nigeria, and Tanzania, which currently suffer crop yield losses of around 50%.

Combined efforts of government, business, and organisations – like TRF – are needed to improve food security through waste and loss minimisation in developing nations. On the part of food processing companies, food waste reduction can be achieved through the development and implementation of

tools, which enable businesses to monitor the quantity of produce moving throughout the supply/value chain process, in order to identify and improve on areas where loss occurs. Once such areas have been identified, improvements can be made to the chain to ensure loss is prevented.



The Ain-Beni-Mathar solar power plant in north-east Morocco. Harnessing Africa's abundant potential for clean energy could power food processing and cold-storage facilities to help reduce food wastage. Photo courtesy Philippe Roos/Flickr

INSIGHT BOX | IOA interviewed industry experts in agriculture, and processing and packaging in South Africa. It was noted that greater investment in transport infrastructure – particularly in refrigerated trucks and in forging better transport corridors – would facilitate the ensured longevity of produce, thus reducing food waste and loss. Currently, in many countries across Africa, fresh produce is transported in ways which result in great loss. Harvested fruit, for example, may be transported along bumpy routes, piled in open-air trucks where they are exposed to direct sunlight and high temperatures, thus being subjected to rapid bruising and spoiling. This in turn results in a large percentage of the harvest having to be discarded by the time it reaches market or processing facilities. Improving transport corridors will facilitate efficient transportation of produce. The increased use of cold trucks to transport produce will furthermore extend the shelf-life of foods, thus reducing loss.

IOA Q&A | Agriculture remains an industry that can be somewhat dictated by the actions of a handful of major market shareholders. The most prominent example, arguably, being multinational companies using chemical technologies to increase production levels to the detriment of local farmers, communities, and the environment. What are your thoughts on the so-called Green Revolution of industrial agriculture and how can its effects be seen within Africa?



Sarah Kiggundu – The Green Revolution aims to expand agricultural production through use of affordable high-yield inputs – new farming

methods based on the use of fertilizers, pest control chemicals, genetically-modified seeds, among other things. While widely adopted in places like the US, China, and Latin America, there are doubts as to whether this “Green Revolution” will be a success in Africa. According to a paper written by leading specialists at The Rockefeller Foundation and the Alliance for a Green Revolution in Africa, the conditions in Africa are different to that of Latin America and Asia. For various reasons, it has become evident that the African continent has not been able to sustain the Green Revolution, despite significant funding towards its application in agricultural production. It can also be argued that the growth that is seen in crop production using such industrial methods does not extend beyond a project’s time limit. In other words, the

land’s production capacity reverts back to its original state – or worse – once the inputs are stopped. In order to actually boost land’s output and fertility long-term, a combination of genetic and organic technologies is recommended but this requires additional labour and capital, which is a challenge to farmers in Africa, most of whom grow food at a subsistence level. Better access to markets is also a crucial component.

That being said, I believe the effects of the Green Revolution are still to be seen in Africa. The continent has only begun to mobilise itself and reaffirm its commitment towards advancement in the agricultural sector, using new technologies and foreign investment. The supporting mechanisms and organisations are in place and aligned towards implementing strategies that are geared towards advancing sector output.



A sign from Ghana’s Ministry of Agriculture that encourages fertiliser use. Critics of synthetic inputs say that while they may boost crop yields in the short term, they degrade soil quality over time.

Photo courtesy Rachel Strohm/Flickr



Abraham Makano – As much as it is necessary to increase food production, bio-technology in food production – such as synthetic inputs and genetically-modified crops – comes at a cost to health and the environment. Inorganic fertilisers deplete natural soil nutrients, creating a vicious cycle where farmers become more and more dependent on them as the soil deteriorates. Not to mention the cost of such inputs, which can become a significant factor for small-scale farmers, who exist on very small profit-margins.

There is an urgent need to promote organic farming. The consumption of industrially-produced food has also given rise to an increase in numerous diseases, such as cancers – many types of which were simply unheard of in previous generations but are now becoming a common feature of the modern, Western-influenced lifestyle middle-class Africans are adopting.



Richard Meissner – From what I know of it, I don't think the Green Revolution has really taken off in Africa. One of the reasons that North America and

Europe, are producing the levels they are is down to policy – such as the Common Agricultural Policy in Europe. This can put African agriculturalists at a disadvantage. Then there are also trade restrictions that can inhibit agricultural production. So it is not only about companies and their associated resources and preferred methods, but also government policies that can influence agricultural production in Africa.



A McDonald's in Port Louis, Mauritius. Incidence rates of cancer and other non-communicable diseases are on the rise as increasingly middle-class populations are trending towards Western-style diets and lifestyles.

Photo courtesy Velkro/Flickr

IN ON AFRICA

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DROUGHT AND CONFLICT

Feature analysis from IOA's Africa Conflict Monitor (ACM)

Historic drought ravishes Southern Africa and raises conflict concerns **By James Hall**

While 2016 has seen the worst drought in a generation, devastating food production and water supplies, more such disasters are likely as climate change intensifies. How governments respond and societies adapt will determine whether populations will come to blows over diminishing vital resources.

Malawi and Swaziland are under States of Emergency, wrought by the severe effects of drought and said dry conditions are worse than the previously devastating historic drought of 1991-1992.

South Africa has gone beyond that, declaring its drought the worst in a century. Because South Africa is the regional breadbasket on

which Southern African nations depend for imported basic foodstuffs, as well as many processed foods, food price inflation has become a regional phenomenon.

Thousands of urban lower- to middle-class families have been pushed into poverty, due to food inflation and the urban poor have cut back on food intake. As water sources dry up, a plague of Yellow Fever and diseases caused by unsanitary conditions and unhealthy water has taken hold of the region.

Cattle have died by the millions, impoverishing rural families. Low exchange rates for regional currencies have driven imported veterinary medicine costs upward, putting them out of reach of farmers whose cattle might survive water-borne diseases with vaccinations. Harvests are down by half or more.



Notably, no food riots have yet occurred. The region is so inured to drought striking marginal farmland somewhere in each country on an annual basis that panic did not take hold, even under the extreme conditions of the largely rainless southern hemisphere summer, which begins in September and ends in March.

The work of the UN's FAO in monitoring national harvests and the mitigations of the World Food Programme (WFP) to bring food to food-deprived communities has become routine.

However, no mitigation can be extended indefinitely. The 2015/16 drought was caused by the worst El Niño weather conditions on record. The El Niño phenomenon sucked up moisture from the eastern Indian Ocean, driving rainfall away from Southern Africa.



*A group of farmers dig ground holes for growing peanuts in Mchinji, Malawi.
Photo courtesy Twin and Twin Trading/Flickr*

The drying weather pattern was worsened by climate change. Because global warming is a continuing situation, set to get worse, previously 'once in a lifetime' droughts and devastating storms have become 'once in a decade'. Should these become annual disasters, Southern Africa's rising human population will be faced with an agricultural output and water availability that cannot meet their needs. At such a point, the resignation of suffering people may turn to aggression.

The demands placed on governments will increase from people who feel their survival is imperilled. When this happens, governments will become more aggressive over their allotment of waterways shared with other countries or may even make grabs of water sources and land. Armed conflict over natural resources may become inevitable if predicted weather conditions continue – unless the region's water resources are regulated by a powerful regional body.

“ Armed conflict over natural resources may become inevitable if predicted weather conditions continue – unless the region's water resources are regulated by a powerful regional body. ”

Country by country assessment of the drought's impact

All Southern African nations have been hit hard by this year's historic drought. The degree of suffering may only be a preview of what lies ahead as the region confronts global warming-induced climate change.

Angola: Rains in 2016 have been poor, following 2015 when rainfall was virtually non-existent. Angola lost 40% of its cereal crop, with the 2016 harvest capable of only meeting a third of the nation's food requirement for the year. About 80% of the southern provinces are without access to clean water supplies and 30% of region's boreholes are non-functional. Some 120,000 children in four southern provinces are severely malnourished.

Half a million cattle are dead nationwide, decimating the wealth of most rural families. Because of the depreciating national currency, the kwanza, the cost of veterinary medicines has risen 530%, making them unaffordable to most Angolan cattle breeders. Cases of humans with water-borne diseases have risen by 76% in 2016.

Poor sanitation and water quality led to a Yellow Fever outbreak in 14 of the 18 provinces, which has spread into neighbouring countries.

Botswana: The Gaborone Dam ran dry in December 2015, signalling the first crisis to befall a country that is largely arid desert in normal years. By May 2016, the country had depleted all supplies of its staple food, maize, and turned to neighbouring Zambia and South Africa for imports, which had to import maize from abroad. On 27 July, for the first time in 30 years, a Declaration of General Countrywide Drought was issued by the government.

Agricultural land cultivation was down 70%, while Brush Fires ravished mountains and rural areas. The diverse animal habitat of the Okavango Delta was endangered and tens of thousands of wild animals have perished. The loss of fauna has cut into Botswana's key tourism sector.

Lesotho: About a third of the population suffers from food insecurity. Government declared the drought a national emergency on 22 December 2015 and appealed for international assistance.

A Drought Response and Mitigation Plan was launched in January 2016, midway through the southern hemisphere summer when rains had failed to materialise and forecasts showed negligible rainfall before the onset of the country's usually dry winter. Water levels at the Katse Dam, which is

Africa's second largest dam, dropped to a relatively low 60% full in August 2016 and water levels continued to descend.

Madagascar: Rainfall has been 75% lower than average, resulting in an 80% drop in agricultural production for an island nation that must be largely self-sufficient in terms of food production. Extreme hunger faces 1.1 million people. From October to December 2016, a programme will be implemented to bring food to all children aged 6-23 months and People Living with HIV (PLWHIV).

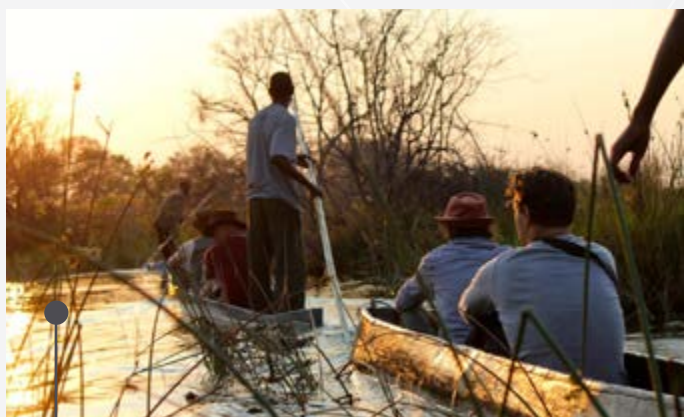
In May 2016, the US committed US\$ 8 million to purchase food for the island's upcoming 'lean season' of January to March 2017, the months prior to the annual harvest season.



Botswana's wildlife and tourism sectors have been hit particularly hard by Southern Africa's drought. Above: African bush elephants in the Savuti Game Reserve.

Malawi: More than 6.5 million Malawians are in need of food aid due to drought. Of these, 4.5 million can be fed by the WFP through March 2017, when hopefully the New Year's crops will come in.

Others will depend on government assistance and international donors for their survival. Government has declared a State of Emergency as a precondition to receive international assistance. A Food Insecurity Response Plan, which runs from July 2016 to March 2017, was launched on 13 July. Nutrition Rehabilitation Units have been set up for all children to receive vitamin A supplements and deworming.



Guides take foreign tourists down a river in the Okavango Delta. Photos courtesy Michael Jansen/Flickr; Ross Higgett/Flickr

Mozambique: Mozambique's drought officially began in March 2015. On 9 February 2016, the government requested additional support to respond to the current drought. By June, 1.5 million people were in need of food aid. Some 95,000 children are malnourished and humanitarian organisations predict a large number of starvation-related child deaths.

The country's mostly rural population must contend with dried-up rivers that used to be their primary water sources. Only about a tenth of emergency funds requested by the UN have been received from international donors.

South Africa: The regional food exporter, on which all contiguous Southern African countries rely, had to import foodstuffs this year, including corn from the US and wheat from Canada. The citrus industry suffered smaller fruit sizes, a result of less water intake for trees despite irrigation, cutting into export volumes.

Rural migration into urban areas by individuals seeking work expanded informal settlements and put pressure on municipalities to deliver services. Service delivery protests were common in townships throughout 2016.

Swaziland: The capital, Mbabane, ran out of water early in 2016 and 15 boreholes drilled for relief all came up dry. Water rationing went into effect, with water cut off for four days at a time.

On 18 February 2016, the government declared a national state Of Emergency and initiated the National Emergency Response but essentially relied on the international community for food relief. Forewarned of the impending El Niño-driven drought, farmers still refused to sell their cattle as a precaution and almost all lost their herds.

Zambia: In addition to the food shortages and cattle deaths caused by drought, businesses and industry, including the key mining sector, were hit hard by an electricity shortage. Hydro-electric generation was diminished or halted because of low water levels at the main Kariba Dam. Already struck by a drop in global commodity prices, the economy was hit hard when electricity was turned off for up to eight hours a day.

Zimbabwe: On 4 February 2016, the government declared a 'state of disaster' due to drought and issued a 2016-2017 Drought Disaster Domestic and International Appeal



Fresh produce market in Africa. Citizens have reduced access to locally produced produce in light of diminished crop yields due to drought conditions. Image courtesy Mauro Eugenio Atzei/Flickr

for assistance. In May, the UN described the food and water situation as “bleak”. A quarter of the rural population, about three million people, are without water. By mid-year, four million Zimbabweans experienced food insecurity, with many more expected to need food aid by year’s end.

A new living paradigm will forestall future conflict over vital resources.

An examination of the human victims of Southern Africa’s current drought finds the rural and poor overwhelmingly affected.

In the 19th century when traditional African life was universally observed, life spans were half of what they are today because of food shortages, lack of hygiene, and health-related problems. Modern African governments have sought to bring health and service amenities

to the majority of Africans who still live traditional lifestyles, residing in mud and stick homes, tilling the soil as subsistence farmers, as cattle and goat herders, as traditional fishermen, and so on. No real attempt has been made to wean the majority of Africans from such lifestyles. However, climate change may force hard decisions.

Do rural Africans wish to live on non-productive farms and depend on food aid, which is never an adequate substitute to their normal rich diets? Can governments and international donors continue to subsidise traditional lifestyles? Policies to electrify every rural hut are well-intentioned but expensive and impractical when nations’ industries are hobbled by electricity shortages.

**“ An
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IN ON AFRICA
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Boys draw water from a pipe outside of a demolished toilet near Livingstone, Zambia. Growing populations will put added pressure on African governments to provide adequate service delivery amid rising energy and food costs, combined with water shortages. Photo courtesy SuSanA Secretariat/Flickr

And what of population policy, which no African nation is currently pursuing? Overpopulation is forcing human occupation of lands that are unfit to occupy. Cultivation is attempted on marginal land, which yields to desertification and exacerbates environmental decline. Peri-urban floodplains and landslide-prone hillsides are covered with shanty settlements. All are a result of societies unwilling to face overpopulation issues.

The hundreds of thousands of dead cattle that might have survived had they been vaccinated against water-borne diseases testify to the type of intervention that can be implemented in future. However, such interventions are costly and the current model of providing such services free of charge to a majority who pursue economically and environmentally unsustainable lifestyles and occupations confronts the limitations of African treasuries.

Most African countries are welfare states for their rural and urban poor populations, abetted by international humanitarian organisations.

This largesse will be tested if the drought in Southern Africa becomes a permanent environmental condition. Only a radical revision of land-use policy can salvage Southern African societies, in the face of rising temperatures and devastating climate change-induced storms. Calamities often propel radical change once society's survival

instinct asserts itself. The destruction wrought by the great Southern African drought of 2016 is a harbinger of more drought and global warming-induced environmental challenges that are likely to come.

ACM ANALYSIS IN BRIEF | Historic drought ravishes Southern Africa and raises conflict concerns

Food riots and cross-border conflict were absent as the drought decimated harvests and water supplies throughout Southern Africa in 2016. Humanitarian organisations managed the situation sufficiently to avoid panic but not to eliminate what may prove to be thousands of children's deaths and widespread hunger and misery.

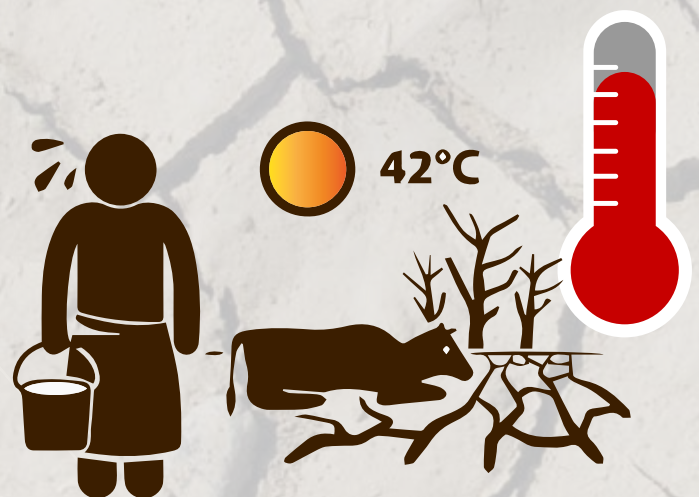
Climate change will ensure future drought disasters for Southern Africa. Only a revision of traditional lifestyles and the implementation of land use policy aimed at environmentally-sustainable settlements and productive agriculture can forestall future suffering.

Key points:

- From 10% to a third of national populations faced hunger as a result of Southern Africa's 2015-2016 drought.
- Economic losses came primarily from decimated agriculture production and diminished hydro-electric generation due to low dam levels, which caused a drop in industrial output.
- While humanitarian assistance saved millions of lives regionally, such assistance cannot be sustained indefinitely when climate change brings destructive and more frequent droughts.

SOUTHERN AFRICA: RESPONDING TO A RECORD BREAKING DROUGHT

Southern Africa's El Niño-induced drought in 2015-2016 was the region's worst in 35 years. Summer rains that normally fall between October and April only began falling by late February. Experts predict a severe "lean season" to last until at least March 2017, during which time urgent assistance will be needed for afflicted nations.



HUMANITARIAN IMPACT

- Rise in malnutrition and trouble accessing water
- Escalation in children dropping out of school to help family access food
- Higher incidence of communicable diseases
- Accelerated rural to urban migration
- 4 out of 10 children in the Southern African already experience stunted growth due to malnutrition – figure expected to increase
- Efficacy of anti-retroviral (ARV) treatment for HIV patients curbed as medicines only work properly when taken along with food – one-third of all people living with HIV reside in Southern Africa
- Drop-off in uptake of health services as people's limited income will be prioritised for food over travel

REGIONAL IMPACT

- 40 million people estimated to be food insecure
- 23 million people require urgent humanitarian assistance
- Poverty to rise as 70% of the region's population is dependent on agriculture for food, income and employment
- Diminished purchasing power of citizens due to increased demand causing inflation, especially for maize
- Dropping value of national currencies and commodity prices to cause severe cuts to government revenue

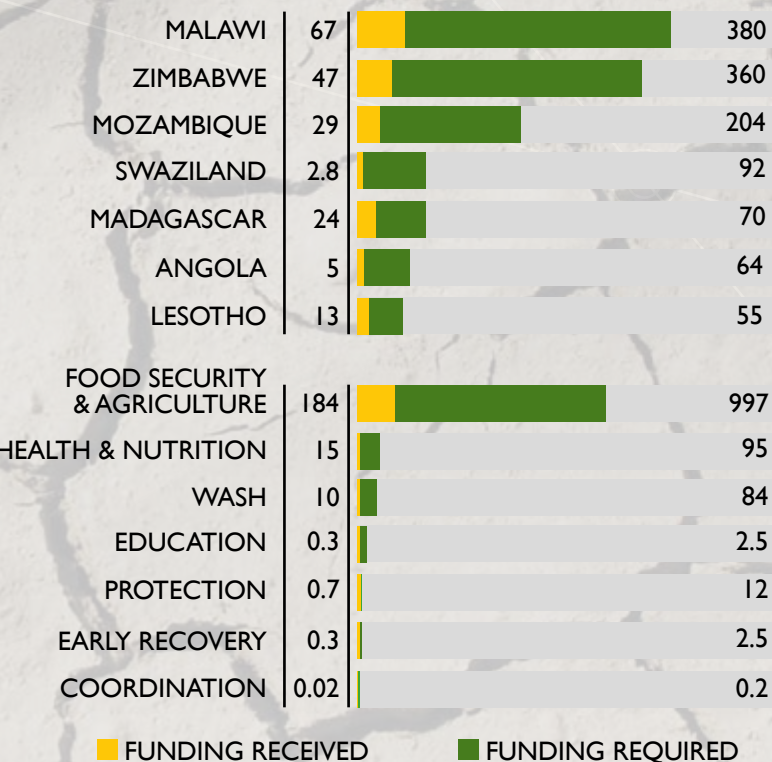
REGIONAL INTER-AGENCY STANDING COMMITTEE (RIASCO)

US \$ 1.2 Billion
Requested
17%
Funded
US \$ 212.6 Million
Received



RIASCO FUNDING (US\$ MILLIONS)

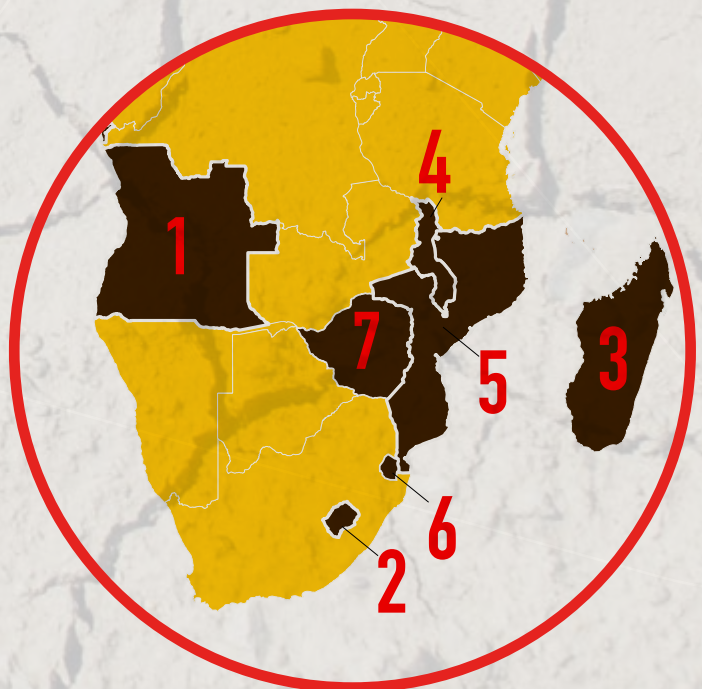
* as of early August 2016, in US\$ millions



RESPONSE MEASURES TAKEN

- 1. Angola:** Focus on drought-affected Cunene, Huila and Namibe districts; disaster risk reduction and strengthening of key animal health services are priorities.
- 2. Lesotho:** Drought response and mitigation plan launched in January 2016. Lesotho Vulnerability Assessment Committee (LVAC) estimates half the rural population are at risk of food insecurity.
- 3. Madagascar:** A nutrition response plan developed by the Nutrition cluster for the period between March 2016 and May 2017. Large-scale feeding programme to be implemented for children under 2 years old and PLWHIV from October-December 2016 to prevent acute malnutrition. 120,000 severely food insecure people have been assisted with food-for-assets by the National Office for Disaster Management since November 2015.
- 4. Malawi:** Response plan to mitigate food security – running until March 2017 – launched on 13 July 2016. Programme to target malnourished children by delivering lifesaving nutritional support for six months and provide vitamin A supplements and de-worming treatments.
- 5. Mozambique:** On 9 February 2016, the government requested additional support to respond to the current drought. A nutrition plan is currently being developed to make available treatment for moderate to severe acute malnutrition, outreach screening and Social and Behavioural Change Communication (SBCC) activities related to neonatal and infant health.
- 6. Swaziland:** Government initiated its national response and adaptation plan in February 2016, which includes adding a second meal to the national school feeding programme.
- 7. Zimbabwe:** Government released a humanitarian response plan in September 2015 and declared a state of disaster in February 2016. Since then, appeals have been made for international support to roll out school feeding schemes and food deliveries for children under 5 years old.

RIASCO CONTRIBUTORS





THE FUTURE FOR AFRICAN FOOD

Food security and water security go hand-in-hand. Ongoing crop loss due to drought in Africa is not sustainable for poorer subsistence farmers who farm to feed their own families.

African nations cannot afford to continue importing basic food provisions, specifically in the face of increasing population numbers and finite humanitarian aid from developed nations.

Subsistence farmers are at the mercy of the climate, governments, and commercial farmers. In the future, with a change in policy and increased need to supply the population with food, commercial farmers may buy up smaller subsistence farming lands and form consortiums, forcing subsistence farming communities to migrate to urban areas in search of work. The result would be highly commercialised agriculture throughout Africa.

While the drought conditions will break in time, climatic extremes are set to occur with ongoing climate change. In this regard, sights should be set by African governments and private sectors on facilitating development and the implementation of adaptation tools and mechanisms for those poverty stricken African communities currently suffering grave food and water shortages.

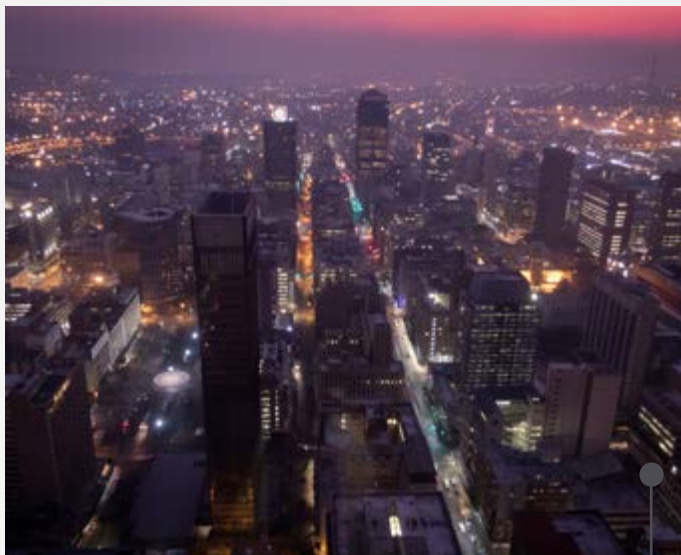
Building more resilient African communities may be easier said than done. Small-scale farmers are taking matters into their own hands in some regions. In a study conducted in 2015 in the Yatta district of Kenya examining climate change adaptation strategies by small-scale farmers, many farmers were employing techniques to improve their farming yields.

The most common adaptation strategy was to switch to more drought tolerant crops, like sorghum and millet. 76.5% of farmers



FOOD SECURITY

from the region, participating in the study, have implemented this technique.



Sandton, Johannesburg. South Africa's commercial capital gets a large portion of its water from Lesotho, roughly 300 km away. Photo courtesy Andrew Moore/Flickr

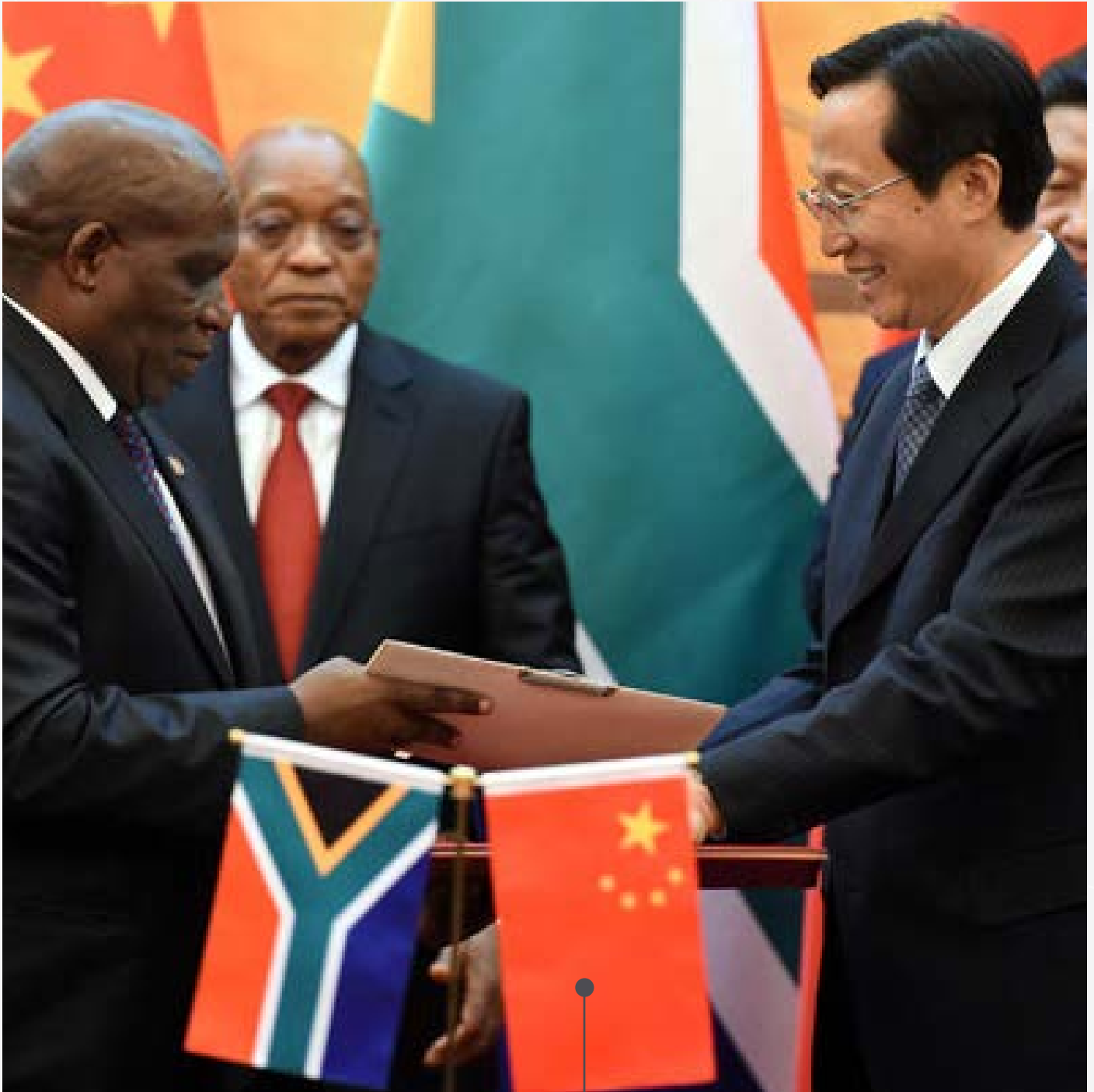
Land reform in Southern African nations is being used to redistribute farmland

to historically disadvantaged groups and new black farmers. In South Africa, land reform is one of many ways in which the government hopes to alleviate poverty and unemployment, while providing people with opportunities. This transfer of land from small-scale white farmers to black farmers is expected to have little impact on the agricultural production in South Africa.

Reasons for this include the relatively small proportion of land zoned for reclamation. To date, less than 7% of land has been reformed.

The dominance and control of commercial agricultural farming and its hold on prime farmlands in the country mean only marginal land is placed under consideration for reform. As a result, reformed farmlands are not hugely productive, with smaller crop yields and land redistribution has not served to improve agricultural performance.

“ The dominance and control of commercial agricultural farming and its hold on prime farmlands in the country mean only marginal land is placed under consideration for reform.”



South Africa's Minister of Agriculture, Forestry and Fisheries, Senzeni Zokwana, seals bilateral agreements between China and South Africa, 5 December 2014. China's growing presence in Africa has been controversial, with critics accusing China of land grabs.
Photo courtesy GovernmentZA/Flickr

INSIGHT BOX | IOA interviews with industry leaders revealed that the South African government has made efforts to allocate portions of land for agricultural use to the previously disadvantaged citizens of the country in the hopes of providing opportunities for them. However, these plots are located in regions which are climatically unfavourable for farming.

Further issues with the reallocation of farmlands include the lack of resources i.e. (funds, farming equipment, and irrigation) available to the recipients of the land. In certain instances, under the land reform efforts, agricultural projects have been formed whereby in excess of 100 families are mandated to manage a commercial farm in the same way as the previous white farmer.

Often new farmers do not have the skills to continue running the farm and the land becomes unproductive or exhausted due to poor farming practices. State agencies are motivated to retain a commercially-based agricultural system in the country, forcing subsistence farmers out of the market. A reliance on commercially grown produce is ever increasing on the African continent and the prevalence of subsistence farmers declines in the face of urbanisation and climate change, making it increasingly difficult for them to live off the land. In order to ensure food security is sustainably achieved in Africa, governments need to move away from their reliance on foreign aid for food security. Instead, they need to empower subsistence farmers by introducing and educating small-scale farmers about adaptive strategies for coping with drought. Further transformation could be made to the agriculture sectors across Africa by forming co-ops of small-scale farmers,

who work together to farm for both commercial and subsistence purposes. Such changes can be instituted by the development and enforcement of robust policy around agriculture and the environment.

IOA Q&A | Looking ahead, the level of food provision and water usage in Africa will have to adapt to its ever-expanding population in one way or another. How do you see these adaptations rolling out and what key considerations would you recommend, both in terms of proactive legislation and industry steps to take in order to achieve the necessary targets, while keeping environmental health a priority?



Sarah Kiggundu – In 2003, African Union (AU) member states have affirmed commitment to revitalising the Comprehensive African

Agriculture Development Programme (CAADP) agenda in the New Partnership for Africa's Development (NEPAD) for enhanced agricultural development. This programme addresses agriculture, sustainable development, and food security in Africa. Each AU member state has pledged to invest 10% of its national budget to the agricultural sector – this essentially recognises the earning potential of the sector and the role it has to play in economic growth on the continent. An ambitious target has been set to double African farmer productivity and cut post-harvest losses by fifty percent.

The CAADP has stated that public-private partnerships are key to understanding institutional and policy changes that are needed to boost productivity, efficiency, and sustainable development. This topic has several cross-cutting themes, which touch on critical issues such as gender, access to finance, regional trade, employment, and entrepreneurship. These are factors that must be addressed moving forward, an integrated approach to development drawing on all relevant stakeholders is vital to making advancements in the sector.

In this instance, I understand “environmental health” to be ensuring sustainable farming systems that can maintain soil fertility, ensure crop/livestock management, implement land and water management strategies, and address food security issues. Land degradation must be avoided as it results in lower crop yields. I do believe the mechanisms are already in place. As mentioned previously, AU member states have reaffirmed commitment towards accelerating agricultural transformation. Furthermore, there are NGOs and civil society groups that are active on the continent to expand agricultural production.

Bolstering food security also requires improving education and promoting gender equality.



Aid workers from the International Rescue Committee give instructions to mothers on proper feeding and hygiene techniques in a clinic at a camp for Sudanese refugees in Eastern Chad.



A woman stands among a young tomato crop in a greenhouse in Lodwar, northern Kenya. Photos courtesy European Commission DG ECHO/Flickr; UK Department for International Development/Flickr



Abraham Makano – In Zambia, for example, the population has been expanding a rate of 3.5% per year, which is fast. Most farmers have not kept up with this growth by annually expanding the amount of hectares they plant in correlation to population growth.

Given that food production can only increase by increasing planted areas, land reforms that promote land ownership by rural communities becomes a vital process to enable these communities to remain self-sufficient in their food production.

As mentioned before, other policies and practices that should be pursued are the use of drought resistant crops, promotion of agricultural research and development, encouraging the linkage between farmers and food processors, and increasing farmer education.



Richard Meissner – I don't think that population growth is the only driver here. There are many initiatives that help us produce more crops with

the same volume of water. There are also new and innovative ideas that we can tap into. This means we should not only look at new technologies but also at new governance ideas and thinking. For instance, instead of restricting the agricultural sector in its water usage during a drought – only starting restricting urban users after we have restricted the agricultural sector – we might

want to apply some sort of year-round soft restriction on urban users in the future. Unaccounted for water, specifically water losses within municipal distribution systems, can be as high as 40%. I think we need to rethink from whom – and how – we restrict water during times of drought, since water wastage can be higher in urban areas than it is in the agricultural sector. We also need to consider using water reclaimed from waste water treatment plants for agricultural production, taking into consideration health aspects, of course.



Women in Somaliland drink from containers filled at an Oxfam water station. Government in drought-stricken African countries may have to consider placing year-round water restrictions on urban users to pre-empt shortages. Photos courtesy UK Department for International Development (DFID)/Flickr; Oxfam East Africa/Flickr

CONCLUSION

The future of Africa will be determined by how well fed its people are. If food insecurity gives way to sustainable food production, a population that is now scratching the soil to achieve only subsistence farming, and governments scrambling for food aid when crops fail, will have the same advantage as the developed world's people and their governments. A battle for sheer survival will be replaced with the freedom to explore paths to realise individual potential. African people will pursue education on full stomachs and achieve answers to the continent's other challenges. The adage 'African solutions to African problems' can only be realised if Africans are liberated from food wants, and harnessing their talents and indigenous ingenuity will elevate African life.

The IOA consultants with expertise in food security and sustainable development who lent their views to this report are united in a belief that once regular and sufficient food production is achieved, Africa will stand at the threshold of activating its people's true potential. Political will is required to embrace new technologies through state funding and to achieve a new

African paradigm that perpetuates cherished African lifestyles and values with modern technological solutions to basic needs. The alternative is catastrophe, as global warming diminishes arable land and water supplies. Africa enjoys the intellectual capital to find ways of obtaining food security for all. As this report has documented, a multi-pronged approach to food security is required, including land reform, balancing agriculture for export with agricultural production needed to feed local populations, and low-cost technologies to make farming viable at the family and community level.

As this report also notes, climate change is worsening Africa's perennial food shortage crises. However, the environmental challenges wrought by global warming need not result in famine and disaster. The dangers are known, as are the solutions. With such awareness, African agriculture can be reformed to finally meet the nutritional needs of all African people. Such an outcome would prove a shining silver lining to the threatening dark cloud of climate change.

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