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Food for Thought:

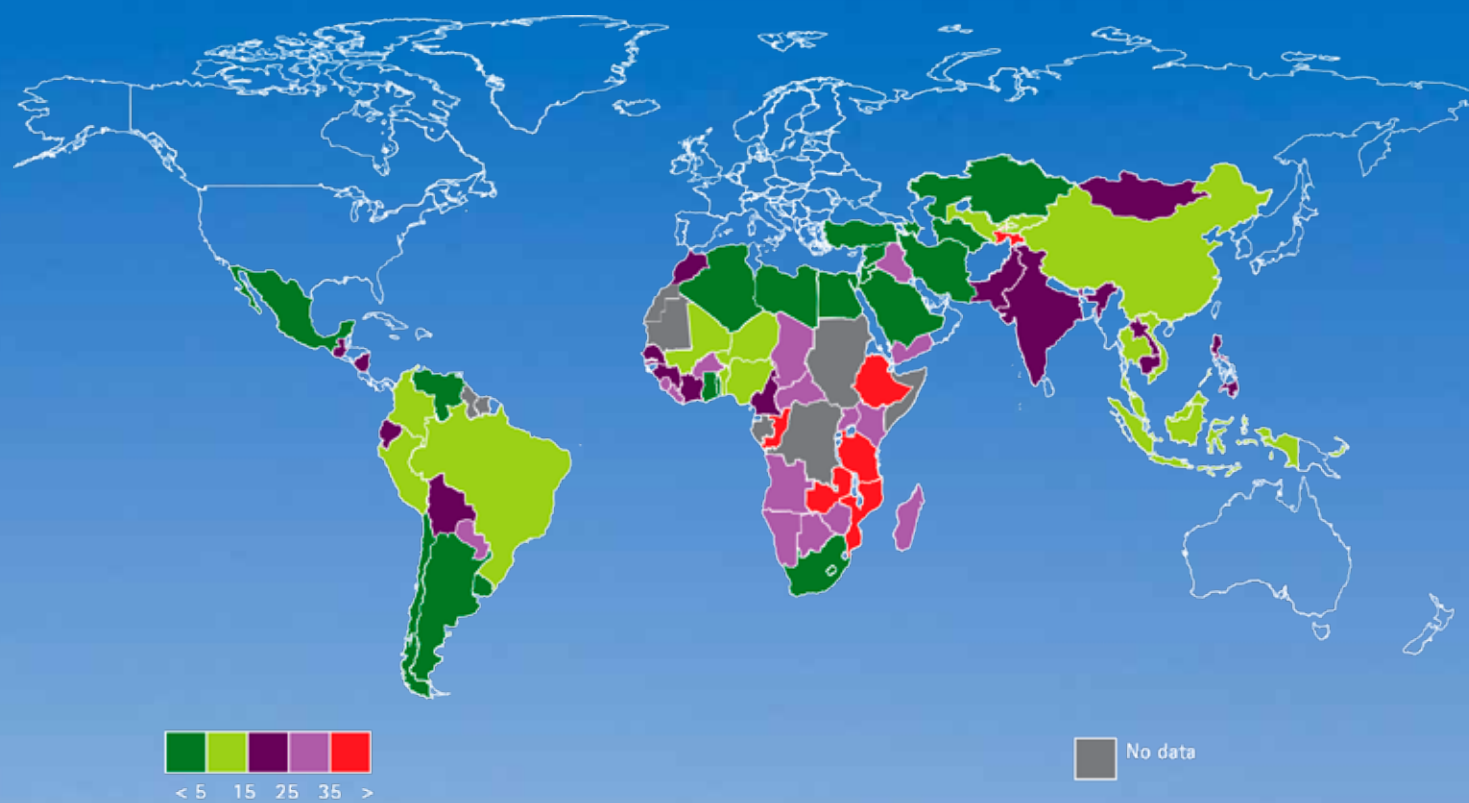
Unlocking the Economic Potential
of Sub-Saharan Africa by Addressing
Food Security

Food is one of the most basic human needs for survival, health and productivity. Yet in 2012 some 868 million people across the globe—most of them in developing countries—lacked some or all of the nutritional elements necessary for good health¹.

Food security exists when people have stable and affordable access to safe, good quality food that consistently meets individual daily calorific requirements². Food insecurity exists when conditions that lead to food security are not or cannot be met.



Figure 1. Percentage of people undernourished (2010 – 2012)



Source: FAO 2012 database



While the risk to food security is a global one, the issue is particularly evident in developing countries where 98 percent of undernourished people are found—a third of whom live in Sub-Saharan Africa³. Agricultural efforts in Africa remain largely small-scale and subsistence-focused which, whilst creating rural livelihoods, is insufficient for sustainable self-sufficiency at a national level. This challenge will be exacerbated by growing urbanisation as 350 million people in Sub-Saharan Africa are expected to migrate into cities over the next 30 years.

The global population has increased in the last 100 years from three billion in 1959 to seven billion by 2012⁴, mainly as a result of declining mortality rates and continued high birth rates. By 2100, the population is expected to reach over 10 billion with over 85 percent of the world's population living in developing nations. In 2012, a population of over one billion people made Africa the second most populous continent after Asia. By 2050, Africa's population will reach two billion people, surpassing both India and China. A combination of slow population growth and well established infrastructure and supply chains will ensure food security for developed nations. Developing nations, by contrast, will need to make significant investments to meet the future demand or face the prospect and consequences of food insecurity.

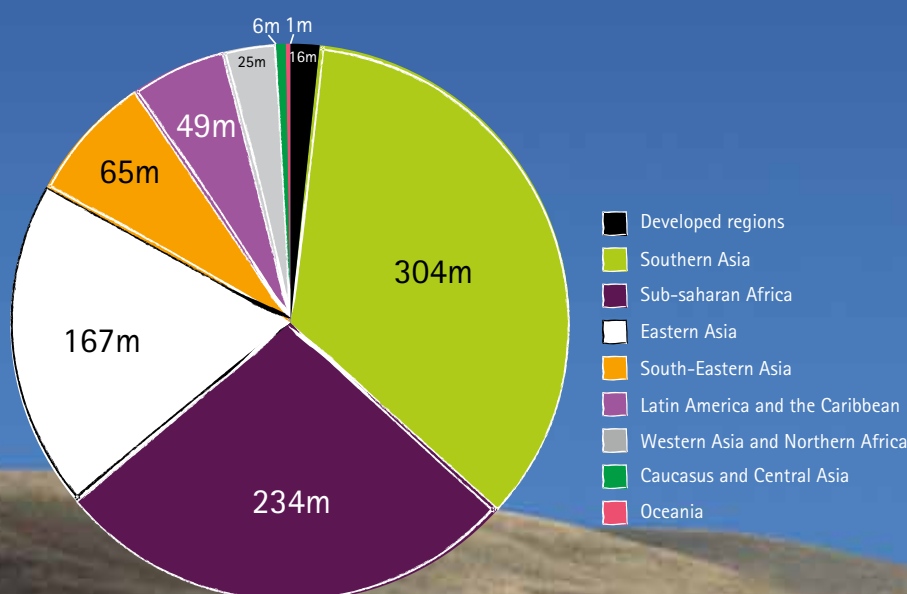
There is significant opportunity to not only address food security but also to unlock the economic potential of Sub-Saharan Africa. Growth in agriculture has proven to be at least two to four times more effective in reducing poverty—and purchasing power for poor communities—than other sectors⁵. Africa has 60 percent of the world's uncultivated arable land⁶ or 733 million hectares—a quarter of total land available. Yet only 79 percent of the land in Africa is cultivated which could provide for increased food production and increased rural incomes to feed a growing urban population.

To achieve increased agricultural production, Africa must improve productivity. Nearly 75 percent of Africa's dry land in production is degraded. For example, in Nigeria, an estimated 351 267 hectares of land are lost to desert each year⁷. Farmers pay between two and six times the global average price for fertilizer due to transport and import costs leading to less fertilizer use than other regions⁸. Sub-Saharan Africa uses less than 10 percent of the average amount of fertilizer used across the United States, Brazil, the European Union and South Asia⁹. There is considerable scope to improve food production on existing land through the use of established technologies that have been successfully adopted in other developing countries.

By 2050, the Sub-Saharan African population is expected to grow to almost 1.96 billion¹⁰—which will create a growing consumer market and collective purchasing power. Companies which seek to capitalise on this growth need to understand that they may be impacted by food security concerns either inhibiting expansion or by increasing operating costs. If food security is not addressed, Sub-Saharan African growth may be slowed—and with it, potential opportunities for profitable growth.

So what should the public sector, private sector and development agencies do to unlock the inherent agricultural potential of Sub-Saharan Africa and address the very real threat to food security? In this point of view we explore the issue of food security and its implications in detail to understand how countries, companies and people might avoid the risks and benefit from the opportunities.

Figure 2. Undernourishment in 2010–12 by region (millions)



Source: Food Security Data and Definitions. Food and Agriculture Organisation of the United Nations. Retrieved August 15, 2012 from <http://www.fao.org/economic/ess/ess-fs/fs-data/ess-fadata/en/>

Figure 3. Forces affecting food security in Sub-Saharan Africa



Learning from the Leaders

Lessons from China¹¹

China's success in modernising domestic agriculture and transforming the rural economy over the last 30 years has provided the country with a strong basis for rapid growth and a substantial improvement in prosperity.

Between 1978 and 2011, China's economy grew at an annual average rate of about nine percent. Agricultural gross domestic product grew by nearly five percent per year and farmers' incomes grew by seven percent annually. Today, just 200 million

small-scale farmers, each working an average of 0.6 hectares of land, feed a population of 1.3 billion.

Food security in China has been enhanced by the growth and diversification of food production. Agriculture has been the main force in China's food security, reducing poverty three times more effectively than other sectors.

From China, we learn that a detailed and sustained focus on small-scale

farmers, unleashing their potential and meeting their needs, can lead to significant growth and poverty reduction—even when agricultural conditions are not ideal.

Despite the many differences between China and Africa, there are key lessons from China's agricultural transformation that can inspire Africa's efforts.



Lessons from Brazil¹²

Rising fuel subsidy costs in the 1970s were a major concern for Brazil, which might not have been able to sustain food imports to feed the population. Recognising that the country was not self-sufficient and had a food deficit, the nation was prompted to take action. Over the last three decades, Brazil has become a global leader in agriculture, overcoming many of the same challenges faced by Africa.

Brazil has grown agricultural production by 365 percent, from US\$23 billion to US\$108 billion, and supplies 25 percent of the world's soya bean trade using only six percent of its arable land. Beef production has grown ten fold making Brazil one of the world's largest beef exporters.

Whilst significant natural land and water resources certainly contributed to Brazil's growth, innovative solutions were required to realise the potential results. Traditional tools for agricultural growth were not necessarily employed in Brazil. Rather, the country focused on developing products for export markets, avoided protectionist trade strategies and took maximum advantage of suitable technologies (for example fertilizer, genetically modified crops and no-till farming).

A significant factor underpinning Brazil's success was the Agricultural Research Corporation, a public company established in 1973 to

promote growth in agricultural production. The company transformed enormous areas of unsuitable farmland into a region which produces 70 percent of Brazil's agriculture. In contrast to China, Brazil showed that focusing on large scale agriculture that gave significant benefits could create conditions for food security.

Africa has a significant opportunity to embrace the lessons learned by Brazil and to recognise similarities such as vast areas of potential arable land, poor infrastructure and mounting poverty.

Six Interlinked Forces Impact Food Security

In Sub-Saharan Africa, food security is largely affected by six interlinked forces, each of which compounds the effects of food insecurity.

Force one: Growing demand. The compounding effects

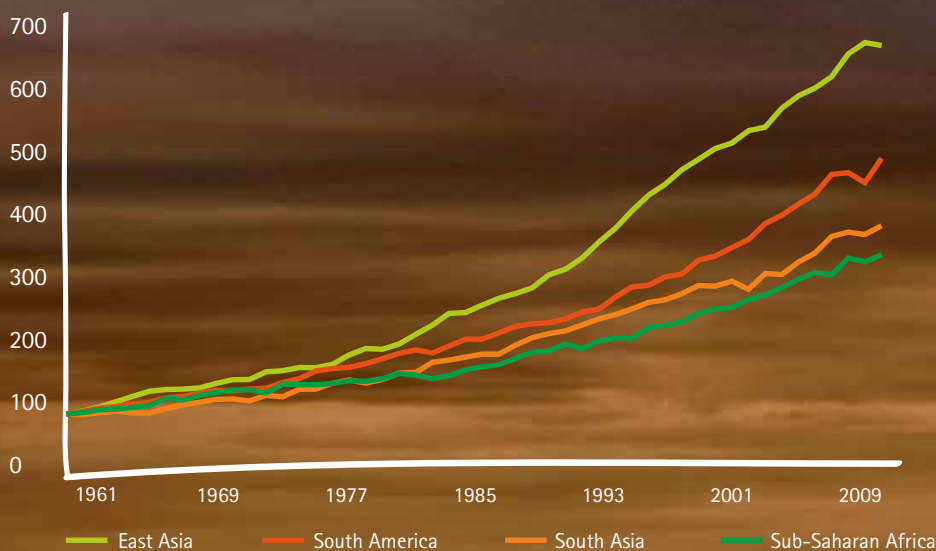
Demand for food in Sub-Saharan Africa is being driven by three distinct trends: growing population, rapid urbanisation and changing diets as people become more affluent.

Africa will experience the most rapid population growth amongst developing countries, with Sub-

Saharan Africa set to make up 20 percent of the global population in 2050 as the population grows to 1.96 billion. By 2030, over half of Africa's people will live in urban areas as urbanisation is set to increase from 40 percent to 62 percent by 2050¹³. Pressure on food production will also increase with the transition from agricultural to services linked to economic development. The effect is that the contribution to gross domestic product (GDP) from agriculture is set to fall significantly. As incomes rise, emerging consumer classes begin adopting more western lifestyles and by implication more sophisticated diets. A shift from

grain staples to livestock products leads to a significant increase in the demand for meat, vegetables, dairy and sugar products. The conversion of crops to livestock at lower rates of efficiency places further pressure on crop resources. For example, 15 kilograms of grain is required to produce one kilogram of beef. Add the effect of crop to biofuel conversion, and pressure on crop resources increases even further. This implies that significant increases in staple crop production are required through arable land and productivity increases to meet the growing demand.

Figure 4. Food Production Index



Source: www.agrioutlook.org

Force two: Production output – the missing revolution

Food production in Sub-Saharan Africa has not kept pace with increased productivity in other developing regions. Over the 40 year period to 2010, per capita world food production grew by 17 percent and aggregate world food production grew by 145 percent. Yet in Africa, food production per capita fell 10 percent due to low levels of investment¹⁴.

Furthermore, Sub-Saharan Africa ranks the lowest in the world in terms of yield-enhancing practices and techniques through mechanisation, use of agro-chemicals (fertilizers and pesticides), and increased use of irrigated land¹⁵. In comparison with other developing regions, the adoption of advanced farming practices and technologies is low in Sub-Saharan Africa.

Consequently, crop yields in Africa are significantly below average yields, for example, maize, rice, groundnuts and sorghum yields in Sub-Saharan Africa are one-third to one-half that of the global average¹⁶.

At the current rate of population growth in Sub-Saharan Africa, food production must increase by 50 percent to feed the population of 1.3 billion in 2030¹⁷. To satisfy this demand, Sub-Saharan African countries are increasingly relying

on imports. Yet in 2007, only about one third of African countries had sufficient agricultural export revenues to fund food import requirements¹⁸. Failing to address the production required to meet the growing demand has potentially dire political and economic consequences for many African countries.



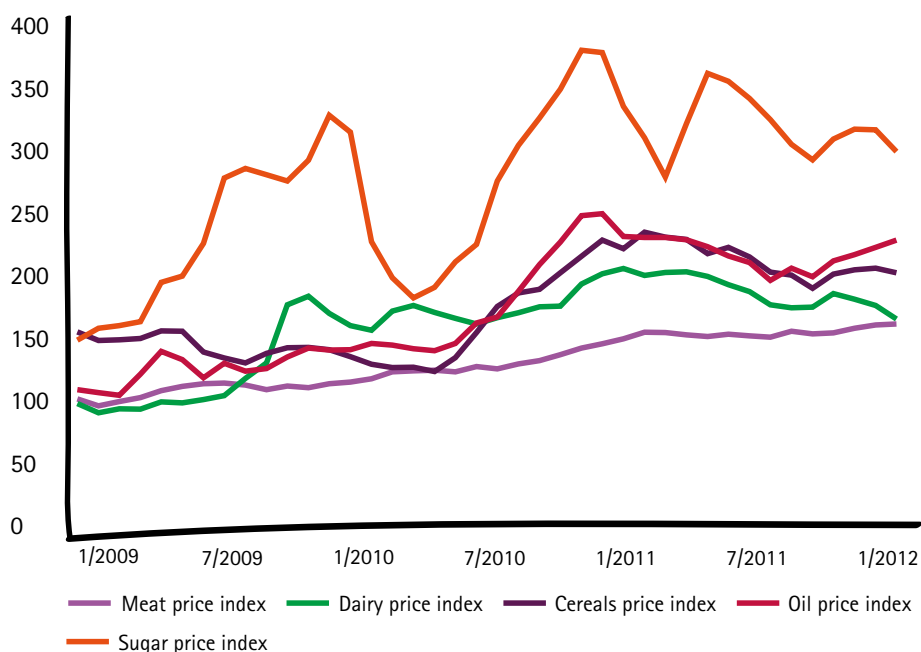
Force three: Price volatility – instability becomes the norm

Short-term food price volatility is exacerbating the effects of food price increases. Global food prices are closely correlated with oil prices (the correlation is about 90 percent) which makes countries with a high dependency on food imports vulnerable to oil price shocks. Oil prices affect agriculture by increasing mechanisation and transport costs, raising operational costs (such as irrigation systems) and through oil derivatives found in fertilizers and pesticides, all of which put pressure on labour costs as producers seek to offset oil-based input increases—or worse, increases the rate of mechanisation which leads to job losses in rural economies.

In parallel, demand for biofuels has increased sharply with the shift from fossil to biofuels (derived primarily from corn). Higher demand for biofuels has lowered corn stocks for human consumption and increased corn prices which in turn, impacts food security. For example, the amount of grain required to fill a 90-litre petrol tank could feed one person for an entire year.

Price volatility is likely to rise due to increasing uncertainty and instability of food production. Unfortunately, rising food prices have the greatest impact on countries dependent on food imports and people in the developing world where more than 70 percent of the household budget is spent on food (compared to 10 percent in the United States and United Kingdom)¹⁹.

Figure 5. Monthly real food prices of key commodities



Source: www.fao.org, www.worldbank.org



Force four: Infrastructure – taking the long road

Physical accessibility to food is directly influenced by suitable routes to market, effective transportation and efficient market functioning. Transport infrastructure in many African countries makes access to markets difficult at best. As a result, over a third of food produced is lost due to supply chain inefficiencies. Moreover, poor infrastructure increases the cost of access to rural markets, making it unprofitable for small-scale farmers to operate commercially. Seasonal access is made even more difficult due to the deterioration of roads during wet seasons and the destruction of other transport infrastructure due to natural disasters. As most farming surplus is fresh produce, farmers are limited

to markets in close proximity which can be oversupplied, leading to price declines to below production cost levels and imbalances in supply and demand between rural and urban areas. Infrastructure needs to not only link rural economies to urban areas but also facilitate cross border movement of produce to deal with regional food security.

To support growth and improve food security by bringing infrastructure such as transport and energy delivery up to an acceptable level in comparison to other emerging regions, Africa would need to invest some US\$93.3 billion annually²⁰.

Figure 6. Infrastructure spending needs for Sub-Saharan Africa (\$ billions annual)

	Capital Expenditure	Operation and Maintenance	Total Spending
ICT	7.0	2.0	9.0
Irrigation	2.9	0.6	3.4
Power	26.7	14.1	40.8
Transport	8.8	9.4	18.2
WSS	14.9	7.0	21.9
Total	60.4	33.0	93.3

Source: Estimates based on Banerjee, Wodon, and others 2008; Carruthers, Krishnami and Murray 2008; Mayer and others 2008; Rosnes and Vennemo 2008.



Road

Railway

Port

Force five: Climate change – a hot topic

Climate change is possibly the most significant factor affecting food security today. Real consequences of climate change include increased frequencies of floods and droughts as well as changing climatic patterns which require changes in agricultural practices to which Africa is not well adapted. In fact, Africa is one of the most vulnerable continents to climate change effects.

While Africa is least responsible for climate change, the continent is particularly vulnerable to the effects including reduced agricultural production, worsening food security and an increased risk of conflict over scarce land and water resources. For example, Kenya, Ethiopia and Tanzania have experienced more than 10 drought events between 1970 and 2004²¹. Sub-Saharan Africa is particularly vulnerable to the effects of climate change given the economic

dependence on primary production sectors. According to some estimates, a temperature increase of 3–4°C, could lead to a 15 percent decline in crop yields—especially in Sub-Saharan Africa, where only about four percent of arable land is irrigated²².

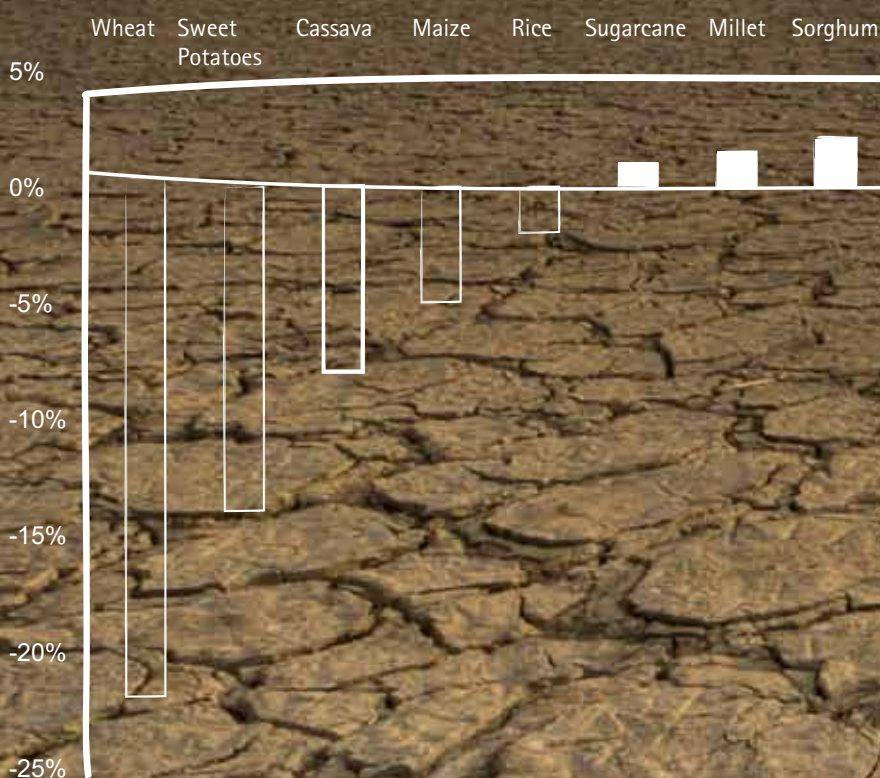
The availability of water in Sub-Saharan Africa is highly variable, with only the humid tropical zones in Central and West Africa having abundant water resources. Reductions in river flow and aquifer recharge are expected to affect water availability in already stressed areas. In 1990, eight Sub-Saharan African countries suffered from water stress or scarcity²³. As a consequence of rapid population growth, expanding urbanisation and increased economic development, the water situation is deteriorating. By 2025, 18 African countries will face water stress and over 600 million people will be affected. The paradox is that vast areas of water-rich agricultural land are not utilised effectively for food production, often due to poor

infrastructure development, including dams and canals.

Water quality is also affected by mining, industrial activity and poor land management practices, all of which act to compound pressure on already scarce water resources. To sustain growth, legal frameworks that protect water and environmental resources are crucial, and these laws must be enforced.

Climate variability which includes short-term climatic events such as El Nino and La Nina conditions and associated floods and droughts, can result in increased risks of crop failure and reduced food security. Furthermore, variability which impacts the timing of rainfall during the rainy season may lead to disconnects in the timing of seasonal cues for planting and harvesting which in turn, affects production and ultimately, food security.

Figure 7. Projected changes in Sub-Saharan African crop yields due to climate change by 2050

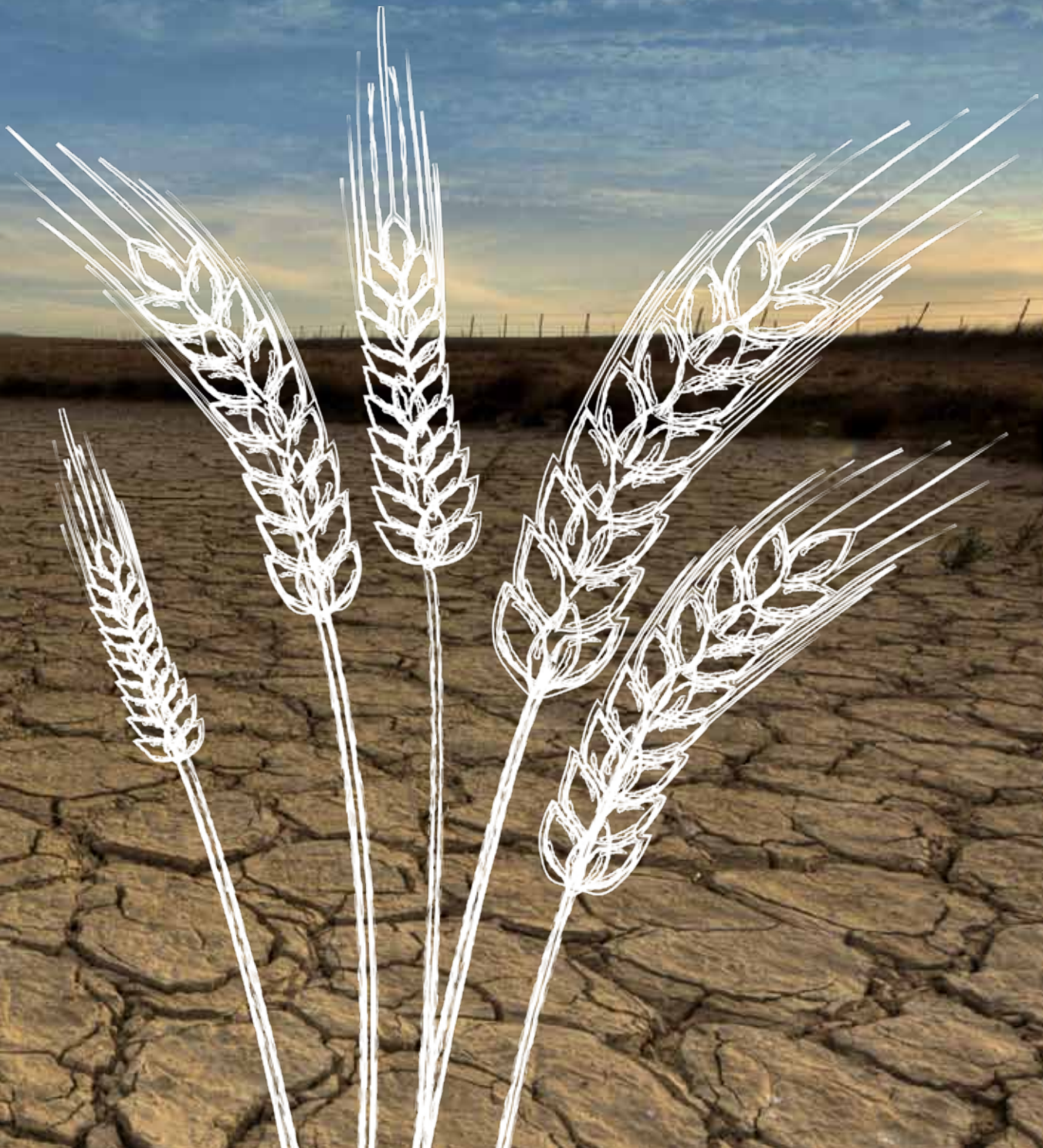


Source: Estimates based on Banerjee, Wodon, and others 2008; Carruthers, Krishnam and Murray 2008; Mayer and others 2008; Rosnes and Vennemo 2008.

Force six: Political stability – a relative term

Conflict exacerbates the issue of food security by impacting the elements of stability of supply and accessibility. Very often food stocks are acquired and stored by one side of a conflict and the population as a whole loses access to necessary staples. Furthermore, conflict leads to the destruction of crops, livestock, land and water as well as disrupting the infrastructure, markets and human resources required for food production and distribution.

But conflicts in Africa are on the decline and governments are becoming more stable. For example, in the Political Instability Index compiled by the Economist Intelligence Unit²⁴, Ethiopia ranked higher than France, the United States and Iceland. This is significant news, not only for food security, but also for private sector development in agriculture. A stable political policy encourages foreign investment and increases investor confidence.



Food Security Index

A Food Security Index was developed to consider two dimensions of food security—food demand and food supply—in order to determine a country's Food Security Score. Food demand takes into account the number of undernourished people, urbanisation percentage and the gross domestic product per capita. Food supply considers the number of calories available to each person, food production capacity and export revenues. The Food Security Index does not attempt to provide a comprehensive review of the food security status for each country but rather to provide a relative measure based on trends in key indicators over the past five years.

Countries with a relatively high food security index have a higher ability to provide the population with the required calorific intake per day through a balance of local production capacity and trade arrangements to import food when shortfalls arise.

Examples include South Africa and Gabon. Countries with a moderate food security rating face significant challenges but have either been able to invest in their local food production capacity or rely heavily on unsustainable practices such as food imports. Some countries in this category include Botswana, Swaziland and Ghana. Low food security index countries are severely affected by food security challenges and lack the export industries required to support food demand through imports. Most countries in this category have more than 50 percent of their population undernourished²⁵. Examples of such countries are Rwanda, Ethiopia and Uganda.

Based on current rankings, South Africa, Gabon, Angola and Nigeria are rated as the most food secure whilst Burundi, Eritrea, Comoros and Mozambique rank as the lowest. Countries with a decreasing trend have shown relatively stagnant or

slow growth towards reducing poverty and are likely to show relatively little improvement over the next decade. But moving down in ranking does not necessarily mean that food security has worsened but rather that food security lags behind the progress being made by other countries.

Several countries, including Nigeria, Angola, Ghana and Senegal, have the potential to significantly improve food security status. We project that these countries will increase food security and overall ranking just as they have shown improvements in their overall poverty situation and signs of significant future investment into the factors that stimulate food supply. Government programmes will be critical to support the growth in domestic production through development of a viable commercial agricultural sector and to reduce dependence on imported staples.

Figure 8. Food Security Index

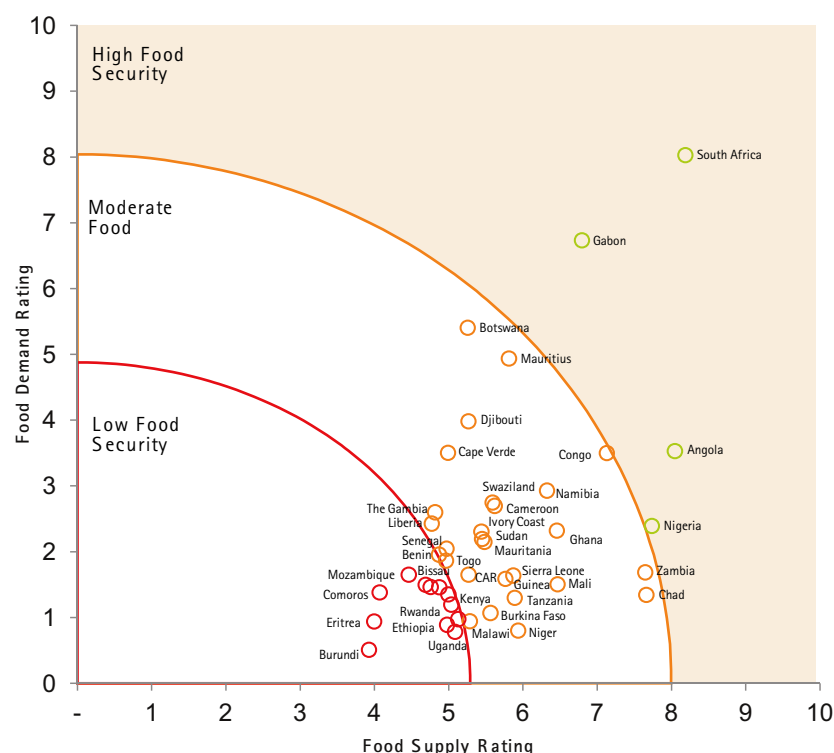


Figure 9. Food Security Index—forecast
2010

	Country	Demand	Supply	Score
1	South Africa	8.03	8.19	11.47
2	Gabon	6.73	6.79	9.57
3	Angola	3.53	8.05	8.79
4	Nigeria	2.39	7.74	8.10
5	Congo	3.50	7.13	7.94
6	Zambia	1.69	7.65	7.83
7	Chad	1.34	7.66	7.78
8	Mauritius	4.94	5.81	7.63
9	Botswana	5.40	5.26	7.54
10	Namibia	2.93	6.32	6.97
11	Ghana	2.32	6.46	6.86
12	Mali	1.50	6.47	6.64
13	Djibouti	3.98	5.27	6.60
14	Cameroon	2.70	5.62	6.23
15	Swaziland	2.75	5.59	6.23
16	Cape Verde	3.50	4.99	6.10
17	Sierra Leone	1.64	5.87	6.09
18	Tanzania	1.30	5.89	6.03
19	Niger	0.80	5.94	5.99
20	Guinea	1.59	5.76	5.98
21	Cote D'Ivoire	2.31	5.44	5.91
22	Mauritania	2.15	5.48	5.89
23	Sudan	2.19	5.45	5.87
24	Burkina Faso	1.07	5.56	5.66
25	CAR	1.65	5.27	5.52
26	The Gambia	2.60	4.82	5.47
27	Senegal	2.05	4.97	5.38
28	Malawi	0.94	5.28	5.37
29	Liberia	2.43	4.77	5.35
30	Togo	1.86	4.96	5.30
31	Benin	1.96	4.87	5.25
32	Rwanda	0.97	5.13	5.22
33	Kenya	1.20	5.04	5.18
34	Madagascar	1.35	5.00	5.18
35	Uganda	0.78	5.09	5.15
36	Lesotho	1.46	4.87	5.09
37	Ethiopia	0.89	4.98	5.06
38	Dem. Congo	1.46	4.76	4.98
39	Guinea-Bissau	1.50	4.69	4.92
40	Mozambique	1.65	4.46	4.76
41	Comoros	1.38	4.07	4.30
42	Eritrea	0.94	3.99	4.10
43	Burindi	0.51	3.93	3.96

Most Secure

Least Secure

2020 Estimated

	Country	Demand	Supply	Score
1	South Africa	7.71	4.94	9.16
2	Nigeria	2.69	7.40	7.88
3	Angola	4.48	5.73	7.28
4	Gabon	6.09	3.85	7.20
5	Mali	1.61	6.29	6.50
6	Mauritius	5.18	3.92	6.50
7	Ghana	2.64	5.44	6.05
8	Senegal	2.02	5.56	5.91
9	Botswana	4.87	3.22	5.84
10	Niger	0.78	5.78	5.83
11	Djibouti	4.10	4.13	5.82
12	Cape Verde	3.94	4.28	5.81
13	Congo	3.29	4.14	5.29
14	Guinea	1.67	4.71	5.00
15	The Gambia	2.82	4.07	4.95
16	Namibia	2.78	4.03	4.90
17	Liberia	2.60	4.06	4.82
18	Tanzania	1.47	4.53	4.76
19	Sudan	2.55	3.96	4.70
20	Cote D'Ivoire	2.48	3.94	4.65
21	Cameroon	2.84	3.57	4.56
22	Zambia	1.73	4.06	4.41
23	Burkina Faso	1.19	4.25	4.41
24	Mauritania	1.95	3.88	4.34
25	Togo	2.10	3.63	4.19
26	CAR	1.61	3.86	4.18
27	Sierra Leone	1.68	3.79	4.15
28	Benin	2.00	3.62	4.14
29	Dem. Congo	1.70	3.70	4.07
30	Uganda	0.86	3.96	4.05
31	Chad	1.38	3.74	3.98
32	Malawi	1.21	3.79	3.98
33	Swaziland	2.23	3.28	3.97
34	Ethiopia	1.15	3.67	3.85
35	Rwanda	1.07	3.62	3.78
36	Lesotho	1.73	3.22	3.66
37	Guinea-Bissau	1.45	3.35	3.65
38	Mozambique	1.97	2.93	3.53
39	Madagascar	1.36	3.16	3.44
40	Kenya	1.23	3.00	3.24
41	Comoros	1.23	2.96	3.20
42	Eritrea	1.03	2.96	3.14
43	Burindi	0.62	2.68	2.75

Food Security Stakeholders

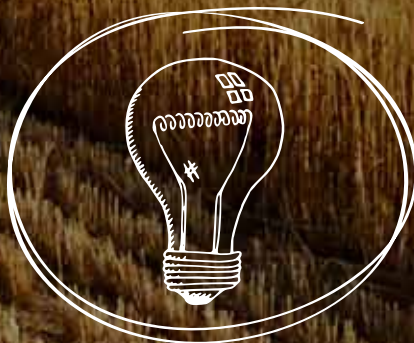
Successfully addressing food security challenges will require the combined efforts of government, business and broader society. These stakeholder groups have converging food security interests and the potential to collaborate to reach viable solutions. Food security needs to be addressed at a broader scale that recognises the inter-related nature of food production systems.



Public Sector



Private Sector



Civil Society



These Stakeholders groups have converging food security interests and have a potential to collaborate

Government

Food security can significantly affect economic activity—both positively and negatively. Countries that encourage investment in the domestic agricultural sector are likely to see increases in gross domestic production. For example, The Central Bank of Nigeria (CBN) in collaboration with the Federal Ministry of Agriculture and Rural Development (FMARD) established the Commercial Agriculture Credit Scheme (CACS) for promoting commercial agricultural enterprises in Nigeria. CACS is financed from the proceeds of the N200 billion, seven-year bond raised by the Debt Management Office (DMO) and is made available to participating banks for financing commercial agricultural enterprises. In addition, state governments can also borrow up to N1 billion for on-lending to farmers' cooperative societies and other areas of agricultural development²⁶.

A tactic adopted by a number of countries has been to purchase or lease land abroad for food production to meet domestic demand and as insurance against future demand. The most active land acquirers include China, India, Japan, Saudi Arabia, South Korea, and the United Arab Emirates. A total of 2,492,684 hectares of approved land allocations have been made since 2004 in Ghana, Madagascar, Ethiopia, Mali and Sudan alone, excluding allocations below 1000 hectares²⁷.

While land acquisition can be considered a long-term solution to the issue of food security by attempting to address production, availability, supply stability and price volatility, there is concern about the impact on Sub-Saharan Africa. Not only does land purchase or lease reduce the land and resources available to locals, foreign countries could use their own people to manage their land thereby reducing the number of jobs available to local people.

Governments, being the representatives of public interest, should focus their efforts on driving sustainable growth by playing the role of **enablers** and **initiators**. The role is primarily to establish and enforce transparent regulations including tariff structures, increase funding for agricultural infrastructure potentially through tax incentives and ensure open trade policies and border access that facilitates market access. The state should devise legislation and regulation that incentivises business and the wider community to align interests with broader growth strategies whilst making it increasingly difficult and onerous for stakeholders to operate unethically. In addition, government needs to be innovative in public spending programmes that initiate more holistic thinking, and identify interdepartmental synergies where several objectives could be met with a single programme. The primary role that government can play is to create the policy and enabling environment that supports the development of an integrated agricultural economy which in turn creates the conditions that support food security.

The most overarching recognition and commitment of the global community to the issues of hunger and food security is recognised in international law and outlined in the Universal Declaration of Human Rights. The International Covenant on Economic, Social and Cultural Rights, to which 180 countries are party, recognises the "fundamental right of everyone to be free from hunger."

In 2000, the United Nations established the Millennium Development Goals. According to these goals, the number of hungry people in the world should be reduced to 10 percent by 2015. By 2011, the figure was 16 percent and looks set

to fall short of the target. Moreover, while this number represents a decrease, in relative terms, the number of hungry people in the world has actually increased.

At the 2009 G8 Summit in Italy, US\$20 billion was promised to poor countries by the L'Aquila Food Security Initiative. These funds were to be used within the framework of an international food security strategy run by the Committee on Food Security. Furthermore, each country had to establish its own strategy for tackling food security within its borders.

Business

While industry level commitments might at first appear to be the domain of the food retailing and agricultural industries, food security is impacted by all industries including general retail, energy, financial services and mining.

Mining has an especially significant impact on food security. Not only does mining require valuable land but concerns have been raised across the globe of the mining impact on land degradation, soil contamination, subterranean water sources and local communities. This is especially problematic in developing countries where the assessment of land for optimal usage is less well regulated.

Traditionally, mining companies have focused on food security primarily through corporate social investment/responsibility initiatives but businesses are now recognising that these issues have a direct impact on their bottom line and are therefore looking for ways to leverage their inherent core capabilities to seize opportunities and unlock the potential of innovative solutions. There is a pressing need for mining companies to consider broader sustainability issues that extend to

local communities and livelihoods in both sustainability and corporate strategies. Investors too need to become more demanding on how their capital is being deployed and its impact on sustainability.

With significant investment capabilities and their responsibility as employers, businesses should play the role of **partners and drivers**. Businesses could partner with governments in public-private partnerships to better serve the market while bolstering income through innovations in product and service design. In addition, businesses could take advantage of incentive-based legislation to reduce set-up and running costs and maximise country-wide growth.

Development agencies

Where development agencies are concerned, donors and non-governmental organisations are the voice of local communities making their unique requirements or needs known to industry. While businesses can provide solutions, for these to gain traction they require the help of development agencies to access the people and to understand their unique requirements.

Development agencies can play the role of **supporters** and community **activators** with government and business initiatives that solve real day-to-day problems at the grass-roots level. They can activate communities to engage with both businesses and governments to ensure their interests are protected and play a part in driving a growth agenda that will benefit both individuals and communities.

Development agencies can assist governments and businesses by raising the profile of key social and environmental issues and helping address them with solutions that benefit all. Creating institutional capacity to support governments is a crucial support role that development agencies can play. Closing the gaps that government and business often cannot fill is a critical role that development and finance agencies can play to contribute to a conducive environment for meeting food security.





Knowledge is power...

One example of an innovative solution in which business benefits from agriculture as well as farmers, is M-Farm. M-Farm is a short messaging service and Web-based application that improves the operational efficiency of farmers by using mobile technology to improve weaknesses in the value chain. It disseminates targeted agricultural information via SMS to small-scale and marginal farmers in Kenya. Through the platform, farmers are able to get real-time pricing information on different products at different markets and locations. This enables them to bargain with buyers and enhances their negotiation power.

In this example, mobile operators have an opportunity to invest in a new line of business and earn a return for their shareholders. Using their core competencies to unlock innovation, while addressing food security, businesses can also demonstrate a positive impact on their bottom line, no matter what their industry or competency.

Moving to an integrated Food Security Value Chain

The food security value chain follows the path of food products from research and development to production, processing, distribution, marketing, retail and ultimately, the consumer. Given the complexity of the agricultural system, progress is no simple matter and technical challenges must be overcome at every stage of the chain.

Governments, private businesses and development agencies have opportunities to support the agricultural value chain. Governments and businesses can deploy innovative solutions and remove bottlenecks whilst development agencies can help ensure that the unique requirements of communities are understood and that the solutions provided have the maximum benefit for the local communities. Governments can use legislation policies and investment to both encourage and support local production. For

example, governments can fund critical infrastructure projects or implement tax policies that support the growth of the agricultural sector. Private business has an opportunity to integrate throughout the value to chain and provide security and stability for all stakeholders. A specific example could be to partner with farmers in long-term contracts to ensure that they can secure financing which is probably the most limiting input in farming.

Examples of large scale integrations include the Southern Agricultural Growth Corridor of Tanzania (SAGGOT) and Staple Crops Processing Zones in Nigeria. SAGCOT is an inclusive, multi-stakeholder partnership to rapidly develop Tanzania's agricultural potential. The partnership was initiated at the World Economic Forum (WEF) Africa summit in 2010

with the support of founding partners including farmers, agri-business, the Government of Tanzania and companies from across the private sector.

In Nigeria, Staple Crops Processing Zones focus on attracting private sector agri-businesses to set up processing plants in zones of high food production to process commodities into food products. This is enabled by government establishing appropriate fiscal, investment and infrastructure policies for staple crops and requires active partnership with farming and processing companies. Critical to the success of large scale programmes is effective collaboration of all parties—government, business and development agencies.

Research and development

The effective research and development of innovative new farming techniques are required to help farmers increase yields and adapt to climate change. There are three primary areas of opportunity:

Crop diversification

African farmers are severely at risk of climate variability and traditional crop varieties are likely to suffer from climate events such as droughts. Crop diversification projects can help increase the capacity of farmers and communities to adapt to climate change by testing new, more robust crop varieties. The key is managing the balance between increasing production and risk of crop failures during adverse conditions.

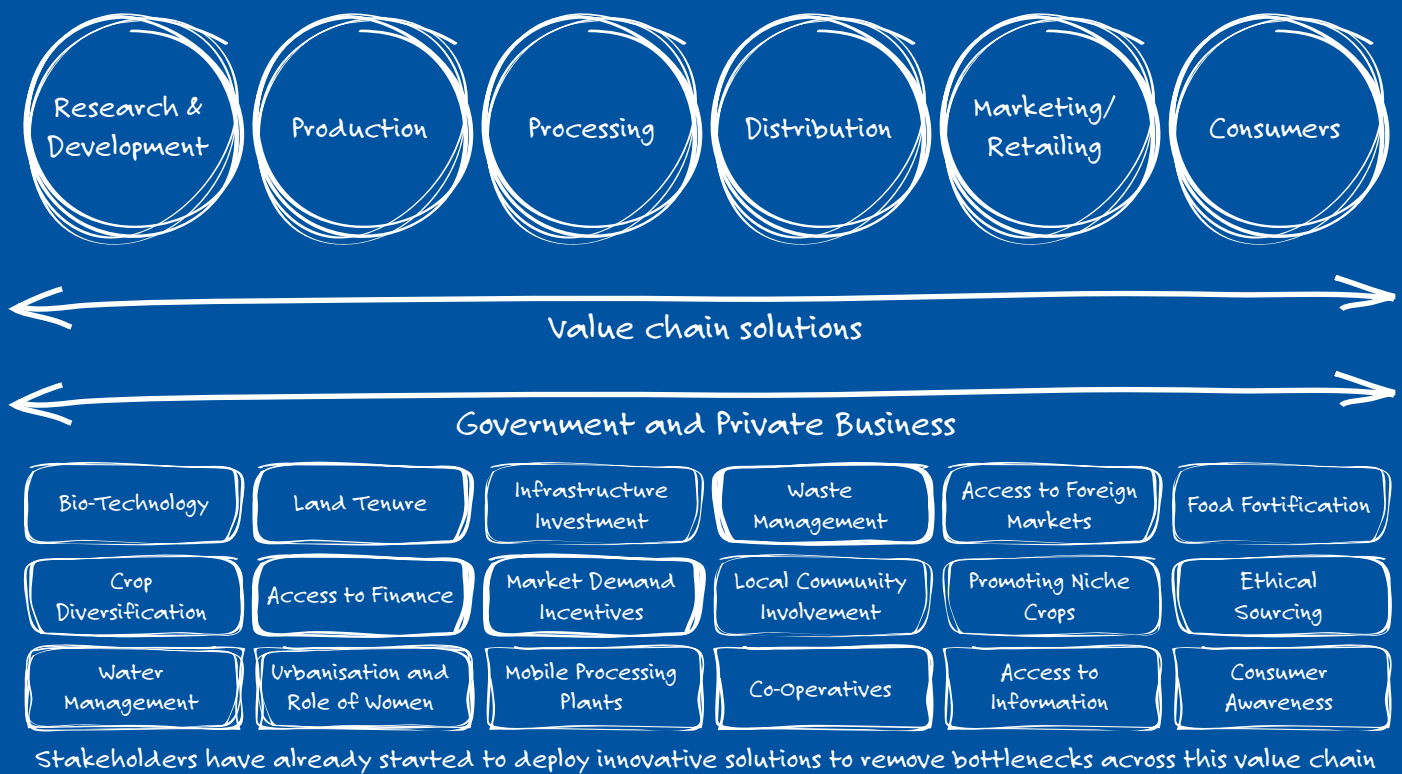
Water management

Access to sufficient water is a challenge for many farmers across Africa. Research into irrigation techniques is essential to their survival. As well as helping to mitigate the climate change risk, improved irrigation has been seen to increase crop yields by 30–70 percent and result in water savings of between 30 and 50 percent²⁸.

Biotechnology

Sub-Saharan Africa ranks lowest in the world²⁹ in terms of yield-enhancing biotechnology practices and techniques. By adding genes to conventional crops to help them resist pests, disease or drought, producers can develop crops that are cheaper to grow, more resistant to disease or pests and that produce higher yields.

Figure 10. Food security value chain



Case Study 1: Drought-tolerant maize leads to 30 percent higher yields³⁰

More than 300 million Africans depend on maize (corn) as their main food source but crop yields are greatly affected by frequent droughts which result in hunger and poverty. Advances in biotechnology have shown little benefit for poor farmers in less-favoured areas. Moreover, limited access to fertilizer, equipment, irrigation and high-quality seeds exacerbates the issue.

To address this, a partnership known as Water Efficient Maize for Africa (WEMA) was formed. The key partner, Monsanto, contributes proprietary

corn lines, testing of genetically modified maize and the substantial expertise and capabilities of its molecular breeding research laboratories and data analysis.

Over five years, the programme aims to develop a variety of drought-tolerant maize seeds. Small-scale farmers would then be offered these seeds on a royalty-free basis. In addition, WEMA intends to provide farmers with improved training and support, pest- and disease-management techniques, healthy soil and access to markets to sell their surplus.

Already, an estimated 161,874 hectares are sown with drought-tolerant varieties of maize giving farmers a 25-30 percent boost in yields.

Case study 2: Standard Bank commits to funding small-scale farmers³³

African farmers typically have low credit, collateral and/or knowledge of financial products, limiting their ability to secure money for investment into productivity improvements. Moreover, financial institutions and agriculture firms have difficulty reaching small-scale farmers due to poor organisation and a lack of agricultural finance expertise, appetite and appropriate products.

In support of a belief that there is a significant opportunity for investment in African agriculture, Standard Bank Africa announced a commitment of

Sh800 million (US\$9 million) for lending to groups of small-scale farmers in Ghana, Mozambique, Tanzania and Uganda. Teaming with Alliance for Green Revolution in Africa (AGRA), Standard Bank created an innovative fund for small-scale African farmers and small- to medium-sized agricultural businesses previously considered too risky for lending. The project also aimed to encourage the empowerment of women, starting with schoolgirls, by exposing them to successful female agriculture entrepreneurs and small-holder farmers.

This financing, coupled with other private sector participation, is helping to increase food processing and supply management as well as linking farmers to formal markets.



Production

Food production is heavily reliant on farmers' ability to access capital, information and leading production practices to maximise their yields.

Land tenure

Government support for agricultural development is still low, but is essential for the protection and support of local farmers. Reinforcing land tenure and establishing effective land rights is vital to promote sustainable development for small-scale producers, as well as for strengthening markets and activating incentives for innovation and sustainability.

Access to finance

African farmers typically have low access to credit, collateral and/or knowledge of financial products, limiting their ability to secure finance for investment into productivity improvements. Herein exists a significant opportunity for financial services agencies to expand their business and economic footprint. The provision of financial support to small farmers via the provision of loans and credit will allow them to invest in productive assets and enhance their production capabilities.

Working capital, asset capital and investment capital represent the primary demand for finance by agribusinesses, with working capital being an especially critical need for Micro, Small and Medium Enterprises in the upstream and midstream due to

the irregular and volatile income flows inherent in many agriculture sectors. The need for financial products that help offset production, market and other types of risk is also critical due to the vulnerability of many agribusinesses to climatic and other catastrophic events with the potential to devastate those businesses.

Micro finance institutions help address the traditional failure of commercial banks to serve this customer group due to a lack of appetite or ability to lend due to product inappropriateness, inflexible credit qualifications and poor physical presence in rural areas. The AgFiMS survey in Tanzania found that more than 80 percent of agribusinesses that used Savings and Credit Co-operative and Microfinance Institutions use them for the purpose of accessing credit³¹. The challenge for financial institutions is the ability to offer finance support at scale to have significant impact whilst managing their own risk and credit exposure.

Empowering women farmers

Women make up 43 percent of developing-world farmers³² but in many regions they have significantly less access to land and water rights, financial services, education and public programs. Training and technical assistance will help increase their knowledge of appropriate inputs, as well as inform them with regard to leading agronomic, post-harvest handling, record keeping, marketing and nutrition/hygiene practices.

Case study 3: Daily bread from mobile cassava plants in Nigeria³⁴

In Nigeria, during the latter part of fiscal year 2012, a memorandum of understanding was signed between Ekiti State Government and the Dutch Agricultural Development and Trading Company (DADTCO).

As a result, several Amorphous Mobile Processing Units (AMPUs) and a central cassava processing factory will be established in the region. Through these facilities, cassava will be processed into cake and high quality cassava flour for consumption within and outside Nigeria. As well as encouraging a better market for local cassava production, the collaboration will establish 5,000 hectares of buffer cassava farm and support a state-wide out-grower farmer's scheme.

Case study 4: Busy bees in Kenya generate income and employment opportunities³⁵

Approximately 80 per cent of Kenya's land is suitable for beekeeping—the agro-ecological and climatic conditions, as well as the land use patterns are near perfect. Yet, the potential of bee keeping and honey production is largely untapped, with a lack of market knowledge, poor quality honey and exploitation by more knowledgeable middlemen all affecting beekeepers.

Honey Care Africa was created to link environmental conservation to poverty reduction by providing beehives and related beekeeping equipment to organisations, communities and individuals. It also guarantees market access for the honey produced by small-holder farmers, which it collects at farm-gates and pays for at fair trade prices. Currently, it operates

in all the Kenyan provinces (with the exception of the North Eastern province) and has seven collection centres across the country.

Honey Care Africa purchases and markets 65–100 metric tons of honey annually from roughly 20,000 hives managed by rural communities in Kenya. It works with over 4,000 beekeepers, who earn on average US\$1.76 per kilogramme of honey they produce. This represents an additional income of approximately US\$250 on an annual basis. Furthermore, it creates additional employment opportunities through contracts (bee suits and smoker manufacture) and both upstream and downstream (timber and packaging materials) linkages.

Since the creation of Honey Care Africa, 15,922 individuals have been informed and exposed to beekeeping in Kenya. Women and youth have been particularly encouraged to participate in the initiative.



Processing

Food processing is the set of methods and techniques used to transform raw ingredients into food ready for consumption. Processing capacity is a major constraint to increase production and integrated value chain development in SSA and herein lies the greatest opportunity.

Infrastructure investment

Infrastructure including transport, energy and storage is required in order to attract and accelerate investment in agriculture value chains. This is an area where public-private financing and collaboration can be especially beneficial.

Market demand and incentives

Processing can extend food shelf life and often leads to higher-value products. However, there must be sufficient market demand and incentives for companies to invest capital in local plants rather than simply importing such goods. Proper analysis of the risks and the market demand will enable economies of scale to be realised through processing capacity.

Mobile processing plants

Mobile processing plants for crops in rural areas can benefit the entire

community by creating jobs and extending the life of crops. Various business models, such as farmer co-operatives, along with government and private sector support, can reduce the distance from crop source to processing, thus creating further skilled employment opportunities.

Creating Scale

There is an opportunity to integrate small scale producers with large scale commercial producers around processing plants for crops such as rice, cassava, maize and sorghum to develop viable value chains.

Distribution

Distribution requires infrastructure to efficiently move food through the various processing steps, wholesalers and retailers en route to the end consumer.

Supply chain efficiency

In developing countries such as those in Sub-Saharan Africa, up to 40 percent of agricultural produce is lost between the farm and the consumer³⁶. Effective distribution techniques are essential to minimise waste. Improving post-harvest handling and storage and encouraging other measures of value chain optimisation can substantially reduce losses, especially

investment in rural infrastructure. In addition, cross border trade and the removal of barriers to trade will become important if countries are able to export excess produce across borders and allow food security to be addressed at a regional level.

Leveraging local communities

Distributing produce across the vast network within Africa can be extremely complex and costly with the current infrastructure limitations. Retailers and producers should investigate partnering with local communities as agents for distribution to hard-to-reach areas.

Co-operatives

Distribution costs can be excessive for small scale farmers as they have to carry the full cost of distribution and are unable to leverage economies of scale through partnerships. Co-operatives are one way that small-scale farmers can consolidate their output, reducing distribution costs and improving negotiating power with large retailers.

Case study 5: Tomato farmers reach new markets in Tanzania³⁷

Tanzania is one of the poorest countries in the world where traditionally, small subsistence farmers had little choice but to accept the prices offered by middlemen. Individually, farmers have poor bargaining power and little means to earn higher incomes.

In early 2010, TechnoServe held a meeting for farmers in the community

and explained how the farmers could benefit by selling their produce together through a business group. As a result, in March 2010, the farming community formed the Mlamke Producer Business Group. By collaborating in business groups, the farmers are able to sell their produce in bulk, connect to better markets and realise more of the crop's value. TechnoServe also facilitated the construction of market collection points: physical structures where farmers can bring their produce to be sorted, packaged and sold.

TechnoServe advisors train the producers in leading agricultural practices and help them to form, and strengthen, business groups of 30 to 70 farmers. Furthermore, the company is working with food processors, avocado exporters and tomato traders to enhance the efficiency of their operations and create demand for small-scale tomato and avocado growers in Tanzania.

Marketing/retail

Food production is heavily reliant on farmers' ability to access capital, information and leading practices to maximise their yields.

Access to foreign markets

The African continent produces many raw materials but still occupies a weak bargaining position in negotiations with more industrialised countries. Reducing the barriers to entering foreign markets (such as import duties and subsidies to local farmers) will result in a more competitive industry with lower prices for the consumer.

Local sourcing

At the core of food security is empowering people in their own areas to feed themselves, reducing their reliance on the global supply chain and creating conditions for localised food security. Commercial organisations should seek local sourcing opportunities rather than importing. In so doing, they can both improve the overall sustainability of their supply chains and have a direct impact on the livelihoods of local small-scale farmers, enabling them to grow more food and giving them access to improved income, in turn, allowing them to buy more food and other goods and services.

Access to information/markets

Farming in Sub-Saharan Africa is increasingly knowledge-intensive. Small farmers often rely on informal exchanges to share information and knowledge on agricultural developments. Stakeholders should seek solutions to mitigate the impacts of price volatility on both producers and consumers through implementation of access to information initiatives (e.g. Rural knowledge network).

Consumers

Innovative solutions and effective collaboration between all stakeholders is required to empower consumers and encourage ethical sourcing. Consumer education and awareness is essential to ensure that demand is built for the correct products.

Food fortification

Vitamin and mineral deficiencies are widespread in African countries. In 31 of the 38 African countries for which data is available, every second child under the age of five suffers from an iron deficiency³⁹. Food fortification is a potential solution in which minute quantities of vitamins and minerals are added to commonly consumed foods during processing.

Ethical sourcing

Consumers are becoming increasingly discerning about the social impacts of food sourcing and companies are under pressure to enhance the position of small producers and workers in their supply chains. Therefore, producers and workers involved in the food system should benefit from company sourcing strategies through initiatives such as preferred supply schemes, ethical trade initiatives and sector-based initiatives.

Consumer awareness

The greatest decline in the nutritional status of children is seen between the ages of six months and two years—a critical nutritional window⁴⁰. Networks of government, industry and donors are essential to disseminate nutrition education at provincial and community levels by integrating basic nutritional education in on-going development projects.

Case study 6: Small-scale farmer access to East African markets³⁸

Small-scale farmers in East Africa lack access to relevant information, knowledge and modern communication tools as well as access to markets for their produce. This limited access to information results in irregular supply and demand for their products as well as high price volatility. For these farmers to succeed, the services that provide them with access to markets must be commercially viable in order to ensure sustainability, and the market intelligence they have access to needs to be locally relevant.

In 2007, the Rural Knowledge Network was established to facilitate the emergence of businesses to support small farmers' access to markets—both locally and nationally. It comprises:

- Information board managers that operate a frontline market intelligence service at the producer level.
- Market access companies that operate a local market brokering service at the district level.
- National Marketing Companies with regional managers that operate a service for transaction security and research and development.

The Rural Knowledge Network (RKN) pilot project for East Africa supports the emergence of commercially viable market access services for building effective and efficient rural marketing chains. It encompasses market access networks in Kenya, Tanzania and Uganda, with actors at the national, district and local level maintaining a constant and effective communication link (via e-mail, telephone, short messaging service (SMS), face-to-face meetings, Internet, et cetera) that supports the sharing of information and business-to-business learning.



Case study 7: Kraft Foods ethical sourcing of coffee⁴¹

Coffee is a billion dollar market and growth in its demand shows no signs of slowing. The economic background—a key force driving the economy—in many developing countries, coffee is the world's second most traded commodity after oil. The crop supports over 25 million people in the tropics and is farmed on about 12 million hectares worldwide⁴². Increasing consumer pressure is forcing many companies to look at alternative sourcing strategies to ensure all participants in their supply chain benefit.

In 2003, Kraft announced its intention to buy significant quantities of coffee beans from certified sustainable sources in coffee-growing communities around the world. This announcement of certification—or auditing—was the beginning of the company's work with the Rainforest Alliance, a not-for-profit organisation and international leader in sustainable agriculture that sets standards for sustainability and ensures farms meet comprehensive criteria before certifying them.

In 2005, Kraft Foods' coffee brand, Kenco, began sourcing from Rainforest Alliance-certified farms where land is farmed in an environmentally

sustainable way while protecting the rights of workers. Over five years, Kenco has transformed its entire range, making Kraft Foods one of the largest purchasers of Rainforest Alliance-certified coffee worldwide.

As a result, 150,000 farm-workers and their families have benefitted from improved working conditions and pay and 70,000 acres of coffee farmland have been protected as well as numerous rainforest plant and animal species.



Imagining the Future

More than half of the Millennium Development Goals are impacted by food security. These goals are eight international development goals that were officially established following the Millennium Summit of the United Nations in 2000. The goals aim to encourage development by improving social and economic conditions in the world's poorest countries and emphasise the role of developed countries in aiding developing countries, with specific targets for 2015.

Agriculture plays a pivotal role in supporting many of the Millennium Development Goals and can drive economic development beyond simply subsistence farming. With the considerable visibility, government and private sector funding and resources allocated to the Millennium Development Goals, it is important to recognise and acknowledge the significance of agriculture. The five Millennium Development Goals directly affected by food security are:

Goal 1: Eradicate poverty and hunger

The livelihoods and the poor are highly dependent on income from agriculture. Moreover, food is typically the largest cost of living for these people. Agricultural growth can be the catalyst for broader economic growth.

Goal 2: Ensure environmental sustainability

Agriculture is both the leading contributor to global climate change and also the sector most sensitive to these changes. Practices such as deforestation and over-irrigation are leaving ecosystems susceptible to disaster. These issues must be addressed to ensure environmental sustainability.

Goal 3: Promote gender equality

Women represent an especially high portion of the agricultural workforce in developing countries, and yet agricultural development has largely bypassed them. There is tremendous potential benefit in promoting gender equality.

Goal 4: Combat disease

Sickness from hunger and malnutrition reduces productivity of many developing countries and leads to otherwise avoidable medical costs. An estimated three million people die each year from food-and water-borne disease⁴³. It's clear that food safety is a global priority.

Goal 5: Develop a partnership for development

Global food production will need to increase by an estimated 70 percent by 2050⁴⁴. Food security is increasingly a priority for traditional food-importing nations as food prices lead to civil unrest and poor economic conditions.

Food security has far-reaching benefits for government, the private sector and development agencies. Addressing food security challenges will help unlock the tremendous potential for economic growth and development both globally and in Sub-Saharan Africa.

Conclusion

Food security is a global challenge. Currently, 16 percent of the total global population is malnourished and with population growth increasing rapidly, the food security situation is unlikely to improve. Whilst the risk to food security is a global issue, food security is particularly evident in developing countries where virtually all of the undernourished are found—a third of whom live in Sub-Saharan Africa.

But the news is not all bad. There are a wealth of opportunities to increase economic opportunity in Sub-Saharan Africa while helping address food security. By seizing these opportunities, businesses can not only contribute to food security, they can also realise significant benefits to their bottom line. Sub-Saharan Africa has abundant in arable land, natural resources and talent—all of which are attractive to potential investors.

Moreover, the problem has been acknowledged by key stakeholders across the globe. Multi-lateral organisations such as the United Nations, governments worldwide, corporates and development agencies are all making commitments focused on the resolution of this international crisis.

While there is no overall solution to food insecurity, individual efforts by various stakeholders do compound to make a significant contribution. The potential solutions outlined in this document are by no means an exhaustive list of imperatives but rather provide a broad insight into the actions that might be undertaken.

Governments should become enablers and initiators, increasingly accountable and with greater commitments to delivering on policies, regulations, investment and education. Businesses need to act as partners and drivers, focusing on sustainable day-to-day business practices that extend beyond corporate social responsibility initiatives to support and develop individuals and communities in a bid to become more food secure. There is ample opportunity and reward for those that create innovative solutions leveraging their core capabilities. Development agencies need to be proactive in adopting new practices. As supporters and activators, they should forge ahead with government and business initiatives that solve real day-to-day problems at the grass-roots level. In this way, the combined efforts of all stakeholders will amount to a serious challenge to food insecurity and spur economic development for the benefit of all.

It is critical that all parties work collectively if the challenge of food insecurity is to be overcome and the full potential of Africa's agricultural potential is to be realised.



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