

AFRICA – BREADBASKET FOR A NEW WORLD?

Africa's potential role in a looming world food shortage

By Riël Malan – August 2009

Food prices have been on the rise globally – to the dismay of many a consumer and government official who is trying to keep voters happy and fed. The recent spate of anti-competitive actions against large South African food companies and comments from various consumer groups about the continuing rise of food prices have in many cases been attributed to greedy retailers and collusion by large food companies. Although the old saying that where there is smoke, there is fire tends to be true, it will be a grave mistake to assume the events of the last 12-24 months are pure market manipulation. Adam Smith's "invisible hand" is hard at work in global agriculture, food- and commodity pricing, and as South Africans and Africans we need to start reading the supply and demand writing that is on the wall.

The global food scenario

Global population statistics reads like a doomsday science fiction novel. Recent UN population growth forecast show a global population growth of 38% over the next 40 years.

<u>REGION</u>	<u>2007</u>	<u>2050</u>	<u>%</u>
World	6,671	9,191 (10,600)	+ 38 %
Africa	965	1,998	+ 107%
Asia	4,030	5,266	+ 31%
South America	572	769	+ 34%
North America	339	445	+ 31%
Europe	731	664	-9%

From the figures you would think that that this growth will amount to a 38% growth in food consumption, but sadly this not the case. The truth we are facing is that we will most likely see a doubling in food demand over the next 40 years due to our changing consumption patterns and other behavioural factors.

Most notably, Africa is looking at a projected 107% increase in population. This will lead to an inevitable increase in consumption on the African continent of at least 107%.

1. The global shift in consumption

The most profound change in human behaviour over the last 200 years is without a doubt our move to increasingly group together in large cities around the globe. Where we were producers of our own food, or at least a portion of it in rural communities, we are now completely dependent on sophisticated food supply networks that supply the cities we inhabit. The demand for "cheap food" by urbanized consumers and the caused competition between global retailers

to deliver on this demand is driving the food supply chains in many cases to the brink of collapse.

Not only are our numbers increasing, the inherent nature of our consumption is changing. If we look at broad statistics, people earning less than \$2\day struggle to maintain their basic carbohydrate intake. When people earn between \$2 and \$10 per day, they eat more protein, specifically meat. Above \$10 a day, demand shifts to added value products. Increased protein consumption can be seen as probably the largest contributor to global demand for agricultural commodities.

The World Bank estimates that the number of people earning \$16 000 per year, will increase almost seven fold from 352 million people to 2,1 Billion people by 2030. This segment eats a lot more meat than the other 4 to 7 billion people that will co-inhabit planet earth with them. If we then consider that on average it takes about 4kg of grain to produce 1 kg of meat, it means that if our demand for meat products increases 7 X times, our demand for grains will increase by a staggering 28X times to produce the meat required by the more affluent segment of society.

Bidwells, a global food consultancy seem to think that food demand will more than double by 2050 of which 50% will come from increased world population, and 50% from successful poverty reduction and demand for more expensive food items like meat.

2. A much needed second agricultural revolution

The world finds itself at a strange and confusing crossroads;

On the one hand, it has major global food security issues at hand. The growth in population will push the number of people living below the \$2\day and minimum calorie intake to 2,7 billion people. 1,1 Billion of these people live below \$1\day and suffer from malnutrition or hunger.

We need to see the likes of a “second agricultural revolution” in order to solve the poverty dilemma that the globe and especially Africa will be facing. For the last century, as a civilization, we have never been able to produce food in larger quantities. Since the sixties, the abundance we have experienced has been unparalleled. Technological breakthroughs and advances made in the 40’s and 50’s provided us with mountains of food and to extent humanity became complacent that we will have the ability to produce whatever we need in future. We did not foresee the doubling of the global population since the sixties and a further increase of 38% over the next 40 years.

We are also seeing that some of the largest population and consumption growth regions are regions that have a shortage of arable land and water. China comes to mind first with around 10% of its land suitable for food production. Economic growth and urbanization and population growth will force China to find answers for food production and food security outside of its borders.

So what is the answer? If we are going to see a 100% increase in demand for food, where will the food come from? Genetically modified food comes to mind, but the consumer jury is not

out on this technological advance in agriculture. Most consumer groups have rejected the notion completely of having food from a genetically modified source. The obvious answer is to utilize the land that the world has to offer fully before pursuing risky strategies.

3. We are running out of land.

It is estimated that currently only 12% of global arable land is not being used. And a lot of this land (outside of Africa) lies in the arctic regions where marginal wheat production may be possible. Any other further expansion of agricultural land in the more temperate zones will have to be at the expense of the environment and will be met with strong resistance from environmentalists. Consumers are also increasingly sensitive to environmental issues and where their food comes from. But then there is Africa where the land availability statistics do not seem to apply and who may possibly hold some solutions to global land, water and problem.

Water is a resource that will not be covered by this article. But as a general comment, agriculture uses 70% of all water resources in the world. It is a resource that will be competed for more and more by industry and people alike. The effects of global warming are forecasted to play a major role in the looming water crisis. Agricultural production is set to be influenced significantly by this trend in coming decades.

4. Africa, the world's future bread basket?

Africa seems to be the **exemption** to the world's shortage of land for future needs. South Africa is commonly seen as the most developed sub-Sahara agricultural country, but has some of the scarcest water resources of all African countries. The following table of the largest and most noteworthy sub-Sahara African countries, sketches a picture of the vast agricultural potential of the African continent:

COUNTRY	TOTAL AREA sq Km	ARABLE LAND	ARABLE AREA (sq km)	IRRIGATED AREA sq km	% ARABLE IRRIGATED	RENEWABLE WATER cu km
South Africa	1,214,470.00	12.1%	146,950.87	14,980	10.19%	50
Mozambique	786,380.00	5.4%	42,700.43	1,180	2.76%	216
Zimbabwe	386,847.00	8.2%	31,876.19	1740	5.46%	20
Zambia	743,398.00	7.0%	51,963.52	1560	3.00%	105
Angola	1,246,700.00	2.7%	33,037.55	800	2.42%	184
Tanzania	885,800.00	4.2%	37,469.34	1840	4.91%	91
DRC (Congo)	2,267,048.00	2.9%	64,837.57	110	0.17%	1283
Congo (Republic)	341,500.00	1.5%	4,951.75	20	0.40%	832
Kenya	569,140.00	8.0%	45,588.11	1030	2.26%	30.2
Uganda	197,100.00	21.6%	42,514.47	90	0.21%	66

Malawi	94,080.00	20.7%	19,455.74	560	2.88%	17.3
Gabon	257,667.00	1.2%	3,117.77	70	2.25%	164
Cameroon	472,710.00	12.5%	59,277.83	260	0.44%	285
Nigeria	910,762.00	33.0%	300,733.61	2820	0.94%	286
Central African Republic	622,984.00	3.1%	19,312.50	20	0.10%	144
Sudan	2,376,000.00	6.8%	161,092.80	18630	11.56%	154
Ethiopia	1,000,000.00	10.1%	101,000.00	2900	2.87%	110
Ivory Coast	318,003.00	10.2%	32,531.71	730	2.24%	81
	14,690,589.00	8.2%	1,198,411.79	49,340.00	4.12%	4,118.50

Source: CIA Fact Book

If we then use South Africa as a benchmark in terms of what is possible as far as water utilization is concerned, and extrapolate the potential in the main listed African countries, we see that Africa holds a major key to increased agricultural production.

COUNTRY	ARABLE	ARABLE	PERMANENT	IRRIGATED	% ARABLE	RENEWABLE	TheoreticalPotential
	LAND	AREA (sq km)	CROP sq km	AREA sq km	IRRIGATED	WATER cu km	Water Usage sq km
South Africa	12.1%	146,950.87	9594.313	14,980	10.19%	50	0.00
Mozambique	5.4%	42,700.43	2280.502	1,180	2.76%	216	64,713.60
Zimbabwe	8.2%	31,876.19	1276.5951	1740	5.46%	20	5,992.00
Zambia	7.0%	51,963.52	297.3592	1560	3.00%	105	31,458.00
Angola	2.7%	33,037.55	2867.41	800	2.42%	184	55,126.40
Tanzania	4.2%	37,469.34	10275.28	1840	4.91%	91	27,263.60
DRC (Congo)	2.9%	64,837.57	10655.1256	110	0.17%	1283	67,062.94
Congo (Republic)	1.5%	4,951.75	512.25	20	0.40%	832	4,951.00
Kenya	8.0%	45,588.11	5520.658	1030	2.26%	30.2	9,047.92
Uganda	21.6%	42,514.47	17581.32	90	0.21%	66	19,773.60
Malawi	20.7%	19,455.74	1110.144	560	2.88%	17.3	5,183.08
Gabon	1.2%	3,117.77	1649.0688	70	2.25%	164	3,117.77
Cameroon	12.5%	59,277.83	11912.292	260	0.44%	285	59,277.00
Nigeria	33.0%	300,733.61	28597.9268	2820	0.94%	286	85,685.60
Central African Republic	3.1%	19,312.50	934.476	20	0.10%	144	19,312.00
Sudan	6.8%	161,092.80	4039.2	18630	11.56%	154	46,138.40
Ethiopia	10.1%	101,000.00	6500	2900	2.87%	110	32,956.00
Ivory Coast	10.2%	32,531.71	35489.1348	730	2.24%	81	24,267.60

	8.2%	1,198,411.79	151,093.06	49,340.00	4.12%	4,118.50	561,326.51

Source: CIA Fact Book

If we assume that we can duplicate the efficiency with which water is utilized in South Africa (0.0033 cu km per irrigated square kilometer), we can potentially irrigate an additional 561,326 square kilometers (5,6M hectares) in Africa. That is more than double the area that the United States has under irrigation (223 850 sq km). Although very rough and theoretical in nature, this calculation shows the vast untapped potential that exists in Africa and its latent ability to contribute to solving its own food problems, but also that of an ever increasing world population.

Africa has all the necessary natural resources to play a major role in solving or at least averting the looming world food crisis for a few decades. Should the world population scenario pan out as expected by the UN, the African continent is in a position to solve a large part of it.

A recent article in Fortune magazine, focused on the importance of arable farming land as a pivotal resource in coming years. Three groups currently investing in agricultural land were the focus of the article. Among the most noteworthy is Lord Jacob Rothschild that was quoted in the article to say: "We think right now is an excellent point of entry for taking a long term position in agriculture." The Rothschild's focus is currently on Brazil, but another featured American company, Jarch Capital, made a seemingly very risky deal with the current government of Sudan. The CEO, Phil Heilberg is of the opinion that Sudan can and will become an agricultural powerhouse with hundreds of thousands of hectares along the banks of the Blue- and White Nile and he is quite willing to take the risks associated with his investment to secure his position in coming years.

As Africans we need to pause and reflect why Western companies are starting to contemplate such "risky deals". The answer is simple. Africa holds one of the key resources that governments and companies will be competing for in the next 35 years – productive land and an abundance of water. Africa needs to realize what a great bargaining chip it still has under its control.

5. A case for Africa to becoming a global agricultural player.

In the Harvard Business Review's recent "Breakthrough Ideas for 2009", one of the ideas is "Now is the time to invest in Africa". The authors of this contribution to the booklet, Paul Collier and Jean-Louis Wornholz states that "a number of sub-Saharan African countries have achieved stability, adopted favorable policies and incentives, and now offer an inviting climate for investment and rates of return higher than those found in other developing countries."

Why is it then that is Africa not taking its rightful place as a global food supplier? Going into the detail answer to this question will take a series of articles, but in short the key aspects that inhibit the rise of commercial African agriculture are:

- 1) African farmers are traditionally subsistence farmers – something that is rooted deeply into the rural culture across the whole of Africa. This aspect of African culture is out of sync with the demands of global food consumption and urbanization. Currently even very efficient commercial farming operations are struggling to survive the price pressure put on them by international commodity markets and retailers. Around Africa you find government policies that encourage and support subsistence farming as a means to reduce rural poverty, and for this purpose, these policies may be effective. But as far as changing the fundamental role of African agriculture in the global arena, it is not doing much to transform the latent potential of African agriculture.
- 2) Secondly, lack of infrastructure can be mentioned as major obstacle. Ports, roads and railroads are generally lacking or in poor condition. Transporting inputs to high potential production areas and the final product to global markets is problematic. This obstacle is however being addressed across Africa. The trans-African highway network and many other infrastructure projects that include the construction of a number of ports are underway and should solve these obstacles in due course.
- 3) of scale in order to compete globally is problematic for African agriculture in its current state. Policies to assist in reaching critical mass in the various agri sectors will be necessary to make African agricultural producers globally competitive. Establishment of co-ops and other mechanisms have served Western agriculture well over the last 60 years and will be a necessity to assist African agribusinesses to reach critical mass.
- 4) Funding and finance of agri projects is problematic in Africa. Firstly because of the perceived risk of the African continent and secondly, large commercial farming projects tend to have long term repayment and breakeven horizons. In many cases longer term horizons than commercial and even government banks are willing to entertain. In order to develop Africa's agri resources, establishing a long term strategic funding mechanism will be crucial in the transformation of Africa's agri sector.
- 5) Land ownership structures in Africa vary from country to country. Constantly changing governments and a lack of a unified approach to land ownership and use, make it difficult to take long term views in some of the countries with the highest agricultural potential. More stable countries are in an advantageous position to attract more long term investment. It needs to be mentioned that many African countries already provide very favorable terms of use of agricultural land.
- 6) The perceived risk of dealing in Africa is a crucial factor that needs to be addressed. Mechanisms like "performance bonds" as mechanism to secure the investment of commercial agricultural companies in Africa need to be explored by African development agencies in order to attract the right investors.

6. Reduction of Poverty

As an industry, there is no other that can parallel agriculture's ability to reduce poverty . By definition agricultural production tends to be rural and has the ability to sustainably reduce poverty in rural areas. Generally the level of skill of the agricultural worker is low and agricultural jobs hold the ability to provide work to all levels of society.

The doubling of the African population in coming yearsholds great risk for Africa on many levels. Firstly from a pure food security perspective, Africa already cannot supply its growing population with the basic food requirement. During the last 24 months, food security was highlighted when countries in the Southeast Asian region stopped rice exports (a growing staple source of starch

in Africa) in order to ensure domestic supply. Should the world as whole be moving towards an uncertain food security situation, Africa has to realize that it will have to be in a position to look after itself. Secondly, the importation of food drains African countries of valuable foreign exchange. Thirdly, the political risk associated with famine is tremendous and can neutralize the progress made on the African continent over the last decade.

7. South Africa's role in African agriculture

It is a well known fact that South Africa has one of the best developed agricultural industries in the world that are on par with their counterparts in the US, Chile and Israel. As with many industries, South Africa is an ideal launching pad of development and agricultural know-how into Africa.

Not only does South Africa have one of the most adverse agricultural climates in terms of water resources, it is also the African country located furthest from international agricultural markets. If we look at the renewable water resources listed in table 1, we see that South Africa has some of the lowest level of all African countries listed. Yet it has succeeded in utilizing these water resources to the full and is playing a strong role in global agricultural commodity markets. South African farmers and farming technology has shown that they can compete internationally, and as such, exporting this knowledge into the rest of Africa seems like a logistical approach.

South African agricultural companies and entrepreneurs can potentially provide the valuable knowhow needed to bring African agriculture to its full potential.

8. 5 Strategic Action Points

In conclusion, 5 strategic aspects will need to be addressed by the African continent in order to overcome the challenges of a rapidly expanding African and world population.

- 1) A realization of the very real threat Africa as a continent and its population is facing in the coming 4 decades. The first dilemma is how Africa will feed 107% more people without having to bow to the pressure of many developed countries that needs Africa's resources. This realization will have to manifest itself in pragmatic policy frameworks across the African continent that will foster and develop commercial agriculture.
- 2) Infrastructure challenges will need to be solved first and foremost.
- 3) A mechanism needs to be developed to fund agricultural development with the goal of putting Africa at the centre of its own solution and a worthy contributor to the solutions of a looming world food crisis. Dealing with risk and funding dilemmas currently experienced, will be at the centre of an African agriculture revolution.
- 4) Fourthly, mechanisms and organizations to gain critical mass and economies of scale will need to be implemented as part of any solution. Co-ops, marketing organizations and boards, Agri-Futures Exchanges, trade finance institutions and other related organizations will have to form part of the solution. Global agriculture is up against a very concentrated retail- and food sector, and without adequate know-how on how to deal with this structural challenge, the barrier to entry may never be overcome by Africa's emerging agriculture. A failure to rise to the challenge will inevitably leave Africa's resources at the mercy of global role player that have long realized the strategic importance of Africa's abundance of agricultural resources.

- 5) Lastly, any strategy will stand or fall in its execution. Leveraging the high level of know-how in South Africa into the rest of Africa, will require clear incentive programs for any agricultural company that has the ability and know-how to execute the strategy on ground level. An example of this is the recent offer of 10 000 hectares by the Republic of Congo to South African farmers on a 99 year lease with no cost. The offer was seemingly greeted with great enthusiasm by a large number of South African farmers.

9. The age of factory farming...

The recent commitment by the African Union to further the development of agriculture through CAADP (Comprehensive Africa Agriculture Development Programme) touches on many of the themes discussed in this article. The statement issued after the summit however against the focus on the development of a “smallholder-friendly value chain”. However noble in its intention, this policy direction cannot deal with the magnitude of the problem that Africa is facing. Small and rural farmer development only goes as far as alleviating the poverty of the farmer and his immediate family, and the failure of small farmer development, even in a developed environment like South Africa, should paint the picture of the outcome of such a policy. The pricing and cost challenges facing even seasoned commercial farming operations at the moment cannot be overcome by such policies. The world has moved into the age of “factory farming” and our policy framework will need to move with it to support large scale commercial farming.

An example is the American poultry industry that was analyzed extensively by Paul Roberts in his recent book, “The End of Food”. The American chicken industry have been very successful at perfecting broiler production to as close as a factory-farming as possible. Roberts reports that to remain competitive, American chicken processors had to move yearly output from 32 million birds (1980) to 260 million birds currently per farming unit to stay in business. On average the American chicken producer earns 4.4 US cent/kg (R0, 44) for chicken that is wholesaled at about \$3/kg for boneless & skinless chicken. This phenomenon is detected and analyzed in many other industries and is now becoming the rule rather than the exception.

The massive leaps in productivity in agricultural production over the past few decades have pushed margins of sophisticated global producers to be very thin in fact in many cases - no profit margin at all. This is most likely about to change since demand will fast start to outstrip supply over the next 30-40 years, but by then, Africa’s time would have come and gone and adequate capacity would not have been created to utilize the opportunity to rectify Africa’s position.

Globally we are in the “age of factory farming” and any strategy that is not designed to equip Africa and its commercial agricultural producers and companies to compete in this environment, is doomed to fail.

The time is now to develop African agriculture to its full potential. We are running out of time, but most importantly, we are running out of food – fast.

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