

North Africa Horizons

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SECURING WHEAT AVAILABILITY

What Prospects for North Africa?



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Introduction

North African governments have in the recent past intensely focused on identifying alternative means to address their food security needs especially in the wake of 2007-2008 global food crisis. The crisis – that has been long in the making – resulted in an unprecedented spike in food prices globally. Wheat prices went up to 130% above their level a year earlier, soy prices where 87% higher and rice prices reaching 74% above its average price.¹

While many developing countries were drastically affected by the crisis, given the prevalence of poverty, North African countries, namely; Egypt, Morocco, Libya, Algeria and Tunisia were particularly affected due to significant dependency on food imports.

Food, namely bread became a central political issue again in 2011, following the Arab uprisings. This sentiment is best captured in the Egyptian chanted slogan of January 25th, 2011: “Bread, Freedom, and Social Justice”. Thus, apart from demand for democracy and justice, food security was seen as fundamental and integral to larger changes that would bring freedom and equality to societies that have lacked the political means to demand social justice.

This issue explores the prospects for securing wheat supply for North Africa. In the first article we explore the prospects for increasing production of wheat, in the second article we explore the options for managing risks associated with imports dependency and in article 3 we explore the prospects of increasing supply through offshoring.

1. Global Issues, Global Food Crisis 2008, <http://www.globalissues.org/article/758/global-food-crisis-2008>



Editorial

Food security is central to human endeavors and has been the top priority on the global agenda for decades, as identified in the UN's Millennium Development Goals (MDGs) 1st

mandate: "eradicating extreme poverty and hunger". A concern that will be sustained post MDG era, attested by the ongoing global consultations on the post-2015 agenda aiming at advancing the "ending hunger, achieving food security and improving nutrition, and promoting sustainable agriculture".¹

In North Africa, fighting hunger is really synonymous with increasing wheat supply as the diet of the region is wheat centric, accounting for roughly 1/3 of all available food.² The political stability is intertwined with prospects of wheat supply. This is best captured by the Moroccan proverb "By bread and salt, we are united". Thus, makes it imperative that wheat be at the top of any political agenda.

The central place of wheat has given it an important cultural significance in the region. It is no accident that wheat bread is called "Aish" in Arabic, which is "life". It is a symbol all God's given gifts for mankind that is treated with respect. Cultural customs prohibit throwing it away or stepping on it without asking god for forgiveness.

Many factors including water scarcity, urbanization, and decline in agricultural sector has impacted wheat supply. This situation has been exacerbated by a very young and fast growing population. This has forced the region to increasingly depend on imports of wheat to meet rising demand. This has generated significant vulnerability to vagaries of international commodities markets threatening livelihoods and political stability of the region.

Securing wheat in North Africa is now an issue of high importance to both food security and political stability now and in the future. When taken in the context of current political instability in the region, and the continuing volatility of the global financial, agricultural and energy prices, coupled with prospect of climate change, the situation can best be termed as extremely dire.

Closing the food gap will remain a top priority for both North African regimes and political actors in their attempts to achieve socio- political development goals. However, even for those with political will this will be an uphill task. Creative strategies will be needed.

New thinking is becoming apparent. Recent years have witnessed new trends such as expanding the productivity of domestically produced wheat, cultivating cash crops and the much debated off shore investments in farmland. What is needed is a strategy that addresses short term medium and longer term issues in a coherent manner.

In the short run the priority will be to manage the risks associated with dependence on international commodities markets; while in the medium term creative ways are necessary to secure supply through increasing domestic production and offshoring supply. In the longer run, the region should not be shy to shift diets to more resilient crops that were staples in the past, like millet and sorghum which can and have served as alternative grains to wheat. Indeed going back to the future might be the key to a food security in the region.

NA food security strategy should be part of a larger Africa strategy. The realization that food security is a regional rather than a country effort has yet to sink in. North Africa stands to benefit greatly from a more food secure Africa and it should think creatively how to bring its millennia of expertise in growing food to the rest of Africa and secure food security for the continent. This will require the development of a partnership that goes beyond food security to one of a shared goal of economic transformation using agriculture as a takeoff premise.

Closing the food gap will remain a top priority for both North African regimes and political actors in their attempts to achieve socio- political development goals.

Challenges to Securing Wheat Availability

**“By bread
and salt we
are united”**

Moroccan proverb

No other crop embodies better concerns over food security than wheat in North Africa; cultivated for centuries it has become central to the diets of the region. Wheat contributes to more than a third of the calorie and protein intake of the population, reaching as much as 50% in some countries. Wheat consumption per capita in the region has increased about 20% in the past decade, to reach an annual consumption of which average between 200 and 210 kg/year/inhabitant (Algeria, Morocco, Egypt), in comparison to the 152 kg/year/inhabitant world average³.

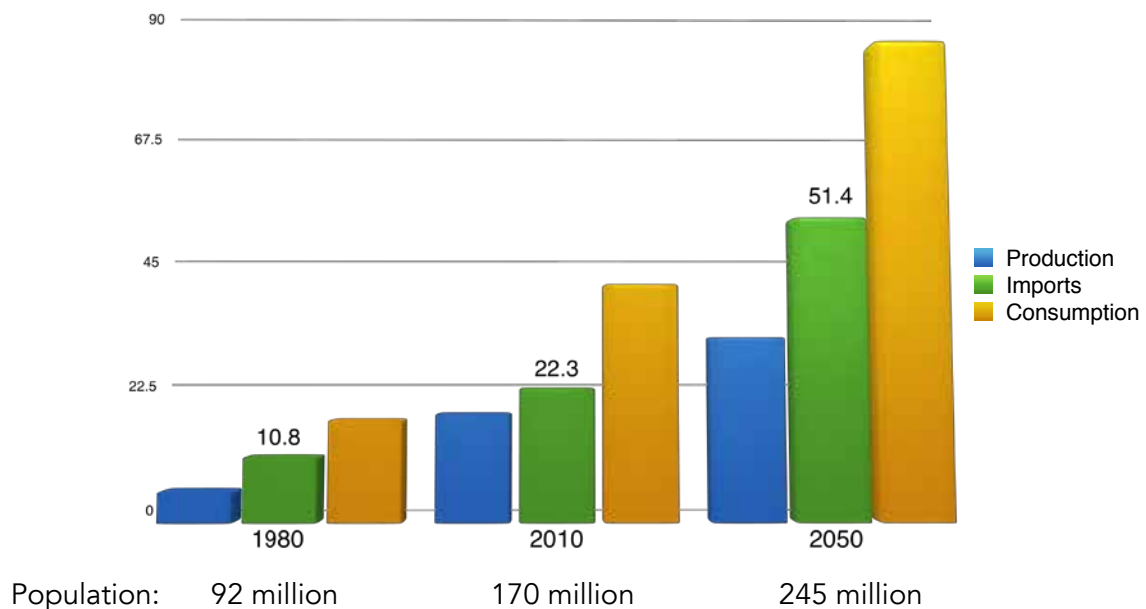
The region has also shown significant growth in demand. Wheat consumption in the region rose by 24% between 2004 and 2010, as against to world rate of 9%. By the year 2030 the average daily calorie intake in the MENA region is expected to reach 3170 kcal; exceeding the developing world average of 3020 kcal.⁴

The key drivers of this demand have been high population growth combined with rapid urbanization. Over the last two decades, urbanization rates in North Africa had grown from 45% in 1990 to current rate of 50-55%. The population of North Africa has also seen rapid increase from 46.9 million in 1950 to 174.05 million in 2014⁵. Population has increased demand for wheat while urbanization has increased demand for wheat based diets increasing proportion of calories derived from wheat products.

Increased demand has not been met by commensurate increase in production and as a result wheat imports have grown rapidly to the point where the sustainability of imports is now a major concern. Algeria, Egypt and Morocco now account for 13% to 15% of the World imports of wheat.⁶

These twin drivers of wheat demand are expected to be sustained. The UN projects North Africa's population to reach 245 million in 2050⁷ while urbanization rate is expected to reach 60% by 2030. This will cause wheat imports to more than double from 2010 values, to a projected 51.4 MMT in 2050.⁸

North Africa Wheat Situation



Source: US Wheat Associates, Wheat Import Projections Towards 2050.

This huge gap will put great pressure on wheat supply making the region very unstable if sustainable supply solutions are not in place.

References:

1. United Nations website, "Beyond 2015", <http://sustainabledevelopment.un.org/index.php?menu=1565>.
2. Duke University, "Comparing Egypt and Saudi Arabia's Wheat GVC", Duke MINERVA Research briefs, April 2014, http://sites.duke.edu/minerva/files/2013/08/4-2014_CGGC_Research-Brief_-Egypt-and-KSA-Wheat-GVC.pdf
3. United Nations Economic Commission for Africa (UNECA), "Food security in North Africa: Situation analysis and reactions from the States over the instability of agricultural markets", North Africa Office, 2012, p.18, http://www.uneca.org/sites/default/files/publications/food_security_in_north_africa.pdf
4. Food Agricultural Organization (FAO), "Farming Systems and Poverty: Middle East and North Africa", Technical Cooperation Department, <http://www.fao.org/docrep/004/ac349e/ac349e05.htm>.
5. World Bank, (summation of countries population. Countries are: Algeria, Morocco, Tunisia, Libya, and Egypt).
6. Ibid, United Nations Economic Commission for Africa (UNECA), p.18, http://www.uneca.org/sites/default/files/publications/food_security_in_north_africa.pdf
7. US Wheat Associates, "Wheat Import Projections Towards 2050", Jan 2011, p.3, <http://www.uswheat.org/uswPublic2013.nsf/xsp/.ibmmodes/domino/OpenAttachment/uswpublic2013.nsf/8C4E4E65781B55085257C150061511A/body/Wheat%20Import%20Projections%20Towards%202050%20-%20C.%20Weigand%20Jan%202011.pdf>.
8. Ibid, US Wheat Associates, p.3.



Prospects for Self-Sufficiency in Wheat in North Africa

There have been calls for the goal of self-sufficiency in wheat. However, despite the significant increase in domestic wheat production in NA reaching an estimated 17.6 million metric tonnes (MT) of wheat in 2010¹, which was the third largest crop on record for the region,

domestic wheat production is still insufficient to meet the needs of the population. Currently, local production only meets a part of demand though there is a significant region variation. The average year produces 40% for Tunisia, 60% for Morocco, 35% for Egypt, 30-35% for Algeria and comes to less than 10% for Libya. Exceptional years, such as 2009 allowed the coverage of cereal needs of 91% in Morocco, and 56% in Tunisia².

The goal of self-sufficiency is an arduous effort that requires overcoming several challenges to increased production. The key challenges are water scarcity, loss of arable land, with both being exacerbated by urbanization and climate change.

Water Scarcity

The region which is largely arid is water stressed. Water scarcity is becoming more acute and is a major obstacle to increasing agricultural production to meet growing food demand. Urbanization has also increased competition for water. From 1950 to the present, per-capita renewable water resources have fallen by approximately 75%. They are expected to decrease by an additional 40% from present levels by 2050. Climate change is further expected to reduce precipitation.

Despite important investments made to develop irrigation; agriculture has remained essentially rain dependent and uncompetitive. The portion of irrigated land in relation to farmed land varies between 7 and 18%, except in Egypt where nearly 95% of farmed land is irrigated by the Nile, and Libya where 50% of cereal production is from irrigated agriculture.

The pressure on water resources has important implications for agricultural production in NA, where 80% of the water demand is for agriculture.³

Loss of Arable Land

Arable land has been declining in the region due to eviction, fragmentation and natural events associated with aridity (winds, heavy rains), soil salinity, combined with pollution and the use of pesticides or fertilizers is also leading to loss of arable land. The growth in urbanization in rural areas increases competition for land for urban and industrial needs removing land from agricultural activity.

Climate change causing additional water stress and desertification

North Africa has difficult agro-climatic conditions making it a predominantly arid and semi-arid zone, subject to periods of recurrent drought and wide variations in rainfall. It is one of the most vulnerable zones to climate change. Rising temperatures associated with climate change are expected to decrease the land areas suitable for agriculture, shorten the length of growing seasons, and reduce crop yields.

Climate change models indicate that annual average rainfall could fall by 10% in the next 50 years. In this scenario, **Algeria and Morocco** would see a 40% fall in their production of dry crops.⁴ Further risk of the Nile delta being submerged, following rising sea levels is a threat for around a third of the agricultural production of **Egypt**⁵. The effects of climate change are already being felt in the region, as seen in the lowered production and the fall in agricultural earnings⁶.

A 2009 report by the National Intelligence Council has identified the Mediterranean as a climate change “Hot-Spot”, as the impact of climate change in this region may be more marked than in other regions of the world.

Relatively heat-tolerant species, such as maize, are expected to suffer the smallest losses in yield and growing area, while heat-intolerant crops, such as wheat, are expected to suffer the largest losses. It is expected that North African countries will have to adapt to the expected effects of climate change by developing more heat-tolerant crop varieties and modify sowing dates to match climate changes⁷.

Options for Secure Food Future

Rethinking agriculture policy/direction

Given the projected demand, the natural resources required for sustaining the local production of wheat remains questionable. We need to question the conventional wisdom of expanding wheat production. Should we “waste” limited water resources on low value crops like wheat or grow high value crops on the land to get cash to import wheat. Indeed the World Bank’s World Development Report (2008) argues that the top agricultural priority for the majority of Arab countries is to diversify production out of staples into high-value crops (like fruits and vegetables) for export. High-value crop production gives landowners more entrepreneurial opportunities, creates more employment for women and landless workers, and raises agricultural wages.

In countries that have a mix of rain-fed and irrigated agriculture, such as Morocco, Algeria and Tunisia, the argument is that water pricing could create a natural split; cereal would be grown primarily under rain-fed conditions, and high-value crops under irrigation. This would increase dependence on imported cereals, but it would also generate more foreign exchange from high-value crops exports that would cover the cost of additional cereal imports. This would also be more profitable for farmers and leave them disposable income with which to buy staples. Some observers and food security experts have pointed that trade and improving markets can have better outcomes on global food security rather than all countries trying to be self-sufficient in the same foods. The 2007-2008 global food crisis was made worse by some key countries banning exports and subsequent hoarding that occurred.

Nevertheless, for many countries food security is conflated with national security and many countries subsidize farmers to grow foods so as to reduce threats of being held hostage by food exporters and increasingly concentrated global commodity traders. The result is that global commodity markets are highly distorted and prices do not represent comparative advantages of various food producers.

Further poorly functioning market may not translate to food security for the most vulnerable. Conversely, it seems that the benefits from the use of scarce land and water for the provision of wheat especially to the poor segment of society can be socially justified despite its lower economic feasibility. It is thus instructive that encouraging farmers to replace cereals with high-value crops has mixed implications for food security.

Financing Self-sufficiency

Another argument that has been advanced against the push towards wheat self-sufficiency is the trade-offs needed. Financing self-sufficiency today will come at the expense of future generations in the sense that the very high investments in land and water required to achieve such a goal will take resources away from critically important sectors such as education or health. It has been pointed out that the impact of increasing self-sufficiency in wheat production on cropping patterns, producer and consumer prices, income distribution and other variables related to wheat policy can be problematic. Research conducted as part of the Role of Agriculture projects phase II on the link between agricultural policies and poverty and hunger reduction indicates that raising self-sufficiency in wheat, from 55 to 65%, would reduce reliance on imports but would also adversely affect other sectors, in particular livestock⁸.

Morocco: Test Case for Self-Sufficiency

Morocco is one of the countries less dependent on cereal imports producing about 60% of domestic demand⁹. Projections show that cereal demand in the country for human consumption (mostly wheat) will increase from 73 million metric tons in 2003 to 103 million metric tons in 2030¹⁰.

Simulation results indicate that if Moroccan farmers made reasonable increases in cereal productivity and cultivated areas, then Morocco could achieve self-sufficiency in cereal production but only until 2017. And the cost of self-sufficiency (expanding area under cultivation and increasing yields) would climb from \$21 million in 2007 to \$6 billion in 2017 the last year self-sufficiency would be possible¹¹.

So, while achieving cereal self-sufficiency is possible, but it will come at a high cost and it is at best a medium term solution. The total value of income sacrificed in order to enforce national cereal production self-sufficiency over an 11 year period would be a staggering \$16 billion. The trade-offs between high-value crops and cereals vary by country, but the underlying message is the same: the opportunity cost of moving towards cereal self-sufficiency increases exponentially as demand increases.¹²

Way Forward

A wheat policy focused on total production self-sufficiency might place a greater burden on agricultural resource allocation. Financing self-sufficiency today will come at the expense of future generations in the sense that the very high investments in land and water required to achieve such a goal will take resources away from critically important sectors such as education or health.

As the region undergoes political, social and economic transitions following the 2011 Arab uprisings, it is clear that a single strategy towards securing wheat availability might not be feasible for all NA countries. Tradeoffs between increasing production, importing, or having more agricultural export earnings with which to import, need to be carefully evaluated, taking into consideration the sustainability of natural resources and the risks embedded in being import dependent.

Millet, Sorghum and Quinoa: The New Wheats in North Africa?

Wheat self-sufficiency will continue to be an elusive goal for NA countries if efforts to increase production are not accompanied by efforts to reduce demand. Reduction in demand means shifting diets from wheat. A herculean task though within reach with thoughtful strategies and leveraging the past.

Growing field crops under harsh conditions of arid environment in sandy soil and using irrigation water of high salinity is one of the biggest threats facing food security especially for small-scale farmers. Two potential Africa-originating crops that can substitute wheat in NA are sorghum and millets, which are both considered “lost grains” in Africa due to the diminishing world interest in them despite their tremendous potential as grains that can be grown in the arid African weather, and that have the high nutritional value needed to outweigh the dependence on wheat.

Pearl Millet was domesticated over 4000 years ago in what is now the heart of the Saharan Desert, spreading all the way from East Africa to India,. However, it is currently an “orphan” among the significant cereals regarding poor support provided by both science and politics. In fact, few people outside of India and parts of Africa have ever heard of it. As a result, it lags behind the other major grains in its genetic development.¹³ Although yields are low, averaging 500 to 600 kilograms a hectare, pearl millet is more reliable than wheat in marginal areas.

“Sorghum”, (known as milo, guinea corn in West Africa, kafir corn in South Africa, dura in Sudan, mtama in eastern Africa, jowar in India and kaoliang in China) is an ancient cereal grain and was collected 8000 years ago in Southern Egypt, in a place called Nabta Playa, it was then domesticated in Ethiopia and Sudan and from there moved throughout all of Africa, where it remains an important cereal grain.¹⁴

It is currently the world's fifth major cereal in terms of production and acreage, and is considered a staple food crop for millions of the poorest and most food-insecure people in the semi-arid tropics of Africa, Asia and Central America. It is characterized as being genetically suited to hot and dry agro-ecologies, which is a feature in most NA countries. Sorghum has a high potential of use in NA countries because it can be used in bread (both fermented and unfermented), porridges, and couscous.¹⁵

Some of the main reasons that serve sorghum being NA most favorable crop in the next decades are its physiology (can be grown in both temperate and tropical zones and one of the quickest maturing food plants), its heat and drought tolerance making it one of the toughest of all cereals, its versatility in use where it can be boiled like rice, baked into bread, as well as potential to be grown in innumerable ways.¹⁶

Another emerging potential alternative to wheat in NA resides in **Quinoa** crop which is also drought, salinity tolerant and can grow in sandy soil of arid and semiarid regions and with other most harmful abiotic adverse factors that affect crop production.¹⁷ Quinoa has been selected by the FAO as one of the main crops to play a major role in assuring food security in the 21st century because of this high nutritional value and its extreme resistance to adverse climatic conditions.

The Food Technology Research Institute (of the Agricultural Research Center) in Egypt has conducted a series of studies and research on how to use sorghum as one of the alternatives to wheat in the production of bread. New techniques are currently also being developed to modify sorghum in order to give it the elasticity needed to make bread, given that it is a gluten free grain.¹⁸

Unlike millet and sorghum which have still not gained momentum in NA, Quinoa as an alternative to wheat is gaining importance in the MENA region as a whole. An international scientific forum "Quinoa as a New Crop in the Middle East and North Africa" was hosted in February 2014 by the International Center for Biosaline Agriculture (ICBA) in Dubai, to evaluate the potential of quinoa as an alternative food and feed crop for salt-affected areas in selected countries of the Middle East, most affected by salinity and water scarcity and where agriculture and agro-food sector contribute significantly to the national GDP.¹⁹

Adaptable, through different varieties and ecotypes, to different climates and also to adverse growth conditions, efficient in water use, Quinoa bears the potential to become a food crop in a region where over 70% of land is under arid or desert. Beyond resilience to harsh condition of the region, quinoa has the added attraction of being a very healthy food. The World Health Organization points that Quinoa possesses protein of a quality similar to milk while the United Nations classify it as a super crop on account of its nutritional value and high protein content. Saponins contained in the Quinoa are believed to have health promoting properties like

anti-oxidant, anti-cancer, anti-inflammatory and anti-viral properties. They have been already used to treat diabetes, hepatitis, high blood pressure, high cholesterol and mental and physical stress. These health attributes make it easy to market quinoa as an alternative diet.²⁰

Under a new Technical Cooperation Project, Egypt and **Algeria** are among the member countries that will receive technical assistance from FAO to select the best genotype to be introduced to Near East and North Africa production. The project was launched in Algiers during 2014 to promote partnerships with international research centers, universities, cooperatives, civil society organizations, agro-business, and seed enterprises to study, assess and evaluate characteristics of the genotype to be introduced.²¹

Substituting wheat with millets, sorghum or quinoa in the future will not only be due to the resilience of these grains to the expected climate changes in NA, but also due to an increasing segment of the NA population that are turning to more healthier grain choices than wheat, and the term “wheat-free” diet is gaining momentum in the region. This presents an opportunity for a growing market for non-wheat products. Sorghum for example, benefits those who prefer gluten-free. A gluten-free diet incorporating sorghum also has been adopted by many with autism, ADHD and irritable bowel syndrome. Even though the twentieth century could be considered the century of wheat, rice and maize, the world and those countries most in need to secure their food interests (such as NA) are likely to turn to crops that have now become “forgotten”, and the twenty first century could be the century of sorghum, millets and quinoa.²²



The high population growth of North Africa - growing to 261.3 million in 2030 with more than 60% urban population- continues to rely on cereals to fulfill its energy requirements, leading to rising demand for wheat.

References

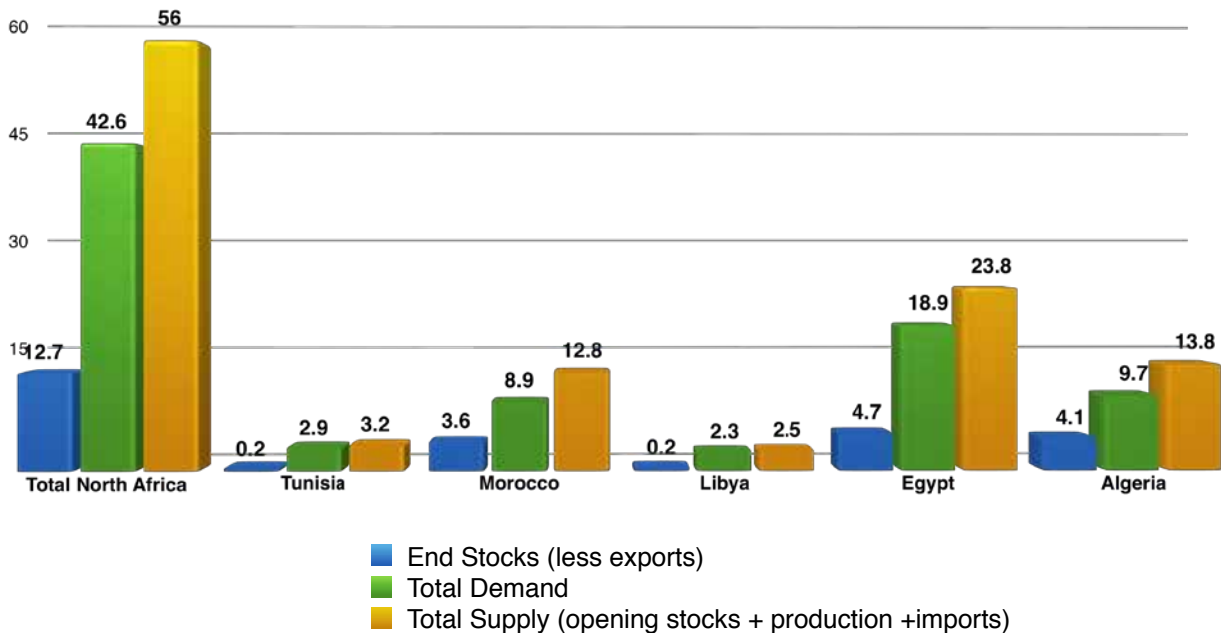
1. US Wheat Associates, "Wheat Import Projections Towards 2050", Jan 2011, p.2, <http://www.uswheat.org/uswPublic2013.nsf/xsp/.ibmmodes/domino/OpenAttachment/uswpublic2013.nsf/8C4E4E65781BB55085257C150061511A/body/Wheat%20Import%20Projections%20Towards%202050%20-%20C.%20Weigand%20Jan%202011.pdf>.
2. United Nations Economic Commission for Africa (UNECA), "Food security in North Africa: Situation analysis and reactions from the States over the instability of agricultural markets", North Africa Office, 2012, p.17, http://www.uneca.org/sites/default/files/publications/food_security_in_north_africa.pdf
3. The Food and Agriculture Organization of the United Nations and Earthscan, "The State of the World's Land and Water Resources for Food and Agriculture: Managing systems at risk", 2011, <http://www.fao.org/docrep/017/i1688e/i1688e.pdf>
4. FAO statistical year book 2014, www.fao.org/docrep/019/i3591e/i3591e.pdf.
5. Ibid, United Nations Economic Commission for Africa (UNECA).
6. Ibid, United Nations Economic Commission for Africa (UNECA).
7. National Intelligence Council, "North Africa: The Impact of Climate Changes to 2030 (Selected Countries)", A Commissioned Research Report, August 2009, http://www.dni.gov/files/documents/climate2030_north_africa.pdf
8. The Food and Agriculture Organization of the United Nations (FAO), "The Roles of Agriculture in Development: Policy Implications and Guidance", Roles of Agriculture Project, Summary Report 2007, <ftp://ftp.fao.org/docrep/fao/010/a1067e/a1067e.pdf>
9. US Wheat Associates, "Wheat Import Projections Towards 2050", Jan 2011, p.2, <http://www.uswheat.org/uswPublic2013.nsf/xsp/.ibmmodes/domino/OpenAttachment/uswpublic2013.nsf/8C4E4E65781BB55085257C150061511A/body/Wheat%20Import%20Projections%20Towards%202050%20-%20C.%20Weigand%20Jan%202011.pdf>.
10. World Bank, FAO and IFAD, "Improving Food Security in Arab Countries", 2009, <http://siteresources.worldbank.org/INTMENA/Resources/FoodSecfinal.pdf>
11. Ibid, "Improving Food Security in Arab Countries".
12. Ibid, "Improving Food Security in Arab Countries".
13. The National Academies Press, "Lost Crops of Africa, Volume 1: Grains", 1996, http://www.nap.edu/openbook.php?record_id=2305&page=77.
14. Whole Grains Council, "Sorghum June Grain of the Month", <http://wholegrainscouncil.org/whole-grains-101/sorghum-june-grain-of-the-month>
15. CGIAR website, "Sorghum", <http://www.cgiar.org/our-research/crop-factsheets/sorghum/>
16. Ibid, The National Academies Press, http://www.nap.edu/openbook.php?record_id=2305&page=128.
17. AS, Shams, "Response of Quinoa to Nitrogen Fertilizer Rates Under Sandy Soil Conditions", http://www.fagr.bu.edu.eg/fagr/images/Third_International_Conference_Researches/34.pdf.
18. Agricultural Research Center website, Food Technology Research Institute, http://www.arc.sci.eg/instslabs/FYP_Details_SP.aspx?lang=ar&SubjectResearchID=1&BranchResearchID=1&NationalProgramID=10&OrganizationId=16&FYP_ID=1&MainOrganizationId=16&NavId=0&OrgId=16.
19. International Center for Biosaline Agriculture (ICBA) Newsletter, "Bioenergy Crop Production: A Case for Creative Use of Reclaimed Wastewater in the Arabian Peninsula", Vol. 15, Issue 1, April 2014, p11, <http://www.biosalinity.org/pdf/Biosalinity-News-April-2014.pdf>.
20. Food and Agriculture Organization of the United Nations, "Quinoa, the 'wonder cereal grain' makes its way into Near East and North Africa's countries", FAO Regional Office for Near East and North Africa, Jan 2014, <http://www.fao.org/neareast/news/view/en/c/260183/>.
21. Ibid, Food and Agriculture Organization of the United Nations, "Quinoa, the 'wonder cereal grain' makes its way into Near East and North Africa's countries".
22. Ibid, Whole Grains Council.



Wheat Import Dependency: Managing Availability Risk

Urbanization and population growth have seen wheat demand grow at average of 3% per year since 2010. Domestic production has failed to expand to meet demand, and as a result wheat imports now constitute about 50% of the demand.

North Africa Wheat Balance Sheet 2013/2014
(Million Tonnes)



Source: MI Prospects, Vol. 16, Issue 23, May 2014, p.7, http://www.hgca.com/media/439111/mi-prospects_vol-16-23.pdf

The region is now the single most important destination for global wheat trade. Egypt is the biggest wheat importer accounting to 6.6% of the world share, Algeria is fourth with imports amounting to 4.4% and Morocco ranked as the 11th with a share of 2.9%.¹

Due to prevalence of high world prices for cereals, grain imports of NA countries are increasingly seen as unsustainable, since imports are creating serious macroeconomic challenges to their national budgets. Between 1990 and 2010, the volume of agricultural imports has tripled in four North African countries (Algeria, Egypt, Morocco and Tunisia), significantly affecting public budgets. In 2010, the share of agricultural products accounted for 18% of total imports in Algeria, 23% in Egypt, 14% in Morocco and 11% in Tunisia.

Some countries are particularly exposed. For instance **Libya** is almost entirely dependent on wheat imports. It produces an average of 125 thousand metric tons while consuming nearly 1.9 MMT annually.² While **Egypt** is the world's largest importer of wheat, importing 45–55% of its wheat needs, which makes it vulnerable to fluctuations in international food prices. Higher global food and fuel prices and lower foreign currency inflows from exports, tourism, foreign direct investment and other sources have resulted in widening of the balance-of-payments deficit in Egypt. While, the import bill is rapidly rising as wheat prices continue its upward trend. Algeria has for example spent \$2.8 billion dollars to buy wheat in 2011, an increase of 125% compared to 2010 while imports volumes only rose by 42%.^{3,4}

This situation is expected to worsen. According to the USDA's "International Food Security Assessment 2012–2011" report, commercial grain imports in NA equaled nearly half of total grain supplies in 2011. By 2022, the import share of consumption is projected to increase to 63%. Tunisia is projected to import 77% of domestic grain supplies, ahead of Algeria, at 74%. Egypt and Morocco are projected to increase their import shares from around 40% in 2012 to around 50% by 2022.⁵

Even if NA countries can successfully address demand and increase productivity, they will remain net importers of wheat through 2030 and beyond, and will therefore be exposed to the risks of thin markets and high prices.⁶ This has forced NA countries to prioritize designing strategies for reducing the risks that come with being a food importing nation.⁷



Managing Risks of Wheat Import Dependency

NA countries are highly vulnerable to any global shock in wheat supply due to its dependency on wheat imports. Recent global food price spikes in 2008⁸ and in 2011⁹ caused largely by restrictions in the form of bans, limited quotas and higher tariffs by regular supplying nations (like Russia, Ukraine, India, Thailand and Vietnam)¹⁰ is a testament to the vulnerability of North African nations. Any sudden and steep hike in wheat prices poses trouble for the region.

The uncertainty of the global markets for agricultural products will continue to be a constant threat to wheat availability of the region.¹¹

The management of the risks associated with grain availability is thus a key priority. Risk mitigation strategies being proposed include stockpiling.

Stockpiling/Strategic Grain Reserves

The recent food price crisis in North Africa, along with diminishing international reserves available to cover the purchases of grains at increasing international prices has renewed interest in stockpiling as the main food security strategy. Many countries are considering expanding their reserves to be able to hold six months' to one year's worth of wheat stocks.

The rationale behind this strategy is to secure physical grain availability by ensuring that enough grains are stockpiled to supply the domestic market during periods of unavailability.

Managing physical availability risk through stockpiling is favored by several North African countries because when accompanied with measures to shield domestic stocks from global markets, stockpiling also helps mitigate price risk; the stockpiling country can essentially sell the stored grain to itself at a price lower than those set by the global markets.¹²

The primary challenge that faces North African governments is estimating the size of physical stocks required, which also largely depends on the objective behind stockpiling (mitigating physical availability risk versus price stabilization). Yet, managing availability risks through stockpiling also comes with several risks, especially in light of the weak and underdeveloped grain storage infrastructure available in these countries. The cost of grain storage in the countries under study is higher than their counterparts in the developed world due to the losses to pests or due to spoilage. All these risks entail building new wheat silos and possibly upgrading the transport and handling systems in place.

There are also hidden costs associated with government storage of grains. One is the crowding out effect that government intervention has on the private grain trade sector. The private grain trade sector in North African countries is already very underdeveloped due to the high risks of future financial losses they could incur as a result of government market intervention.

Improving Logistics

An alternative to building storage is to build efficient logistics that can make it easy and cheap to move grain from markets (local and global) to consumers. Improving logistics is akin to developing virtual stockpiles. Developing virtual stockpiles can be a more cost-effective and flexible strategy to address quantity risk than physical stockpiles.

Nonetheless, underperforming logistics are a problem throughout the region. There is great variation in logistics performance in NA. **Algeria** is one of the bottom 10 countries ranked worldwide, whereas **Tunisia** is in the top among low-income countries. Despite sharing similar good relations and close ties with the EU, **Morocco** vastly underperforms compared to Tunisia. Both countries implemented exemplary customs and port reforms. Tunisia, however, was quicker to improve domestic logistics like trucking and warehousing, and also implemented an electronic data exchange to simplify customs clearance. The logistic excellence of countries like Tunisia qualifies them as future regional import hubs.

Way Forward

Stockpiling reserves and improving logistics are options that can be used to lower risks. These stand-alone strategies are not enough. In looking ahead, the following considerations should inform strategies adopted.

- Storage and logistics are two sides of the same coin. A more integrated approach that develops both storages and supply chains in an integrated package is the way forward as the two go together.
- As pointed out earlier, government sponsored initiatives might crowd out private sector and distort grain market creating greater vulnerabilities. Bringing private sector not only improves supply but also allows government and private sector resources to be leveraged through a Public Private Partnership (PPP).
- A regional approach is needed to allow the creation of grain hubs that can allow regional movement of grains when required.



This plan announced by Egypt is an example of this approach.

Towards an Integrated Regional Grain Hub

Egypt has announced its plans to become “the food security center” of the Middle East, by building an integrated world-class hub for grain storage in the center of Egypt, in cooperation with Blumberg Grain, a leading global food security company. The project aims not only at securing the national wheat and grain needs of Egypt, but to be also a strategic reserve of wheat and to provide neighboring countries with their grain needs.

Returns from the project will be in the form of returns on logistic services (storage and trade) provided, as well as return on value added activities that are to take place in the context of the project. The first phase of the new megaproject covers 93 sites across Egypt, and enables the primary processing of 3.7 MMT of wheat per year on a platform of 3.6 million square feet of storage space.

According to the Egyptian government, the project implementation is planned to start in the early months of 2015. Expected to be located in Damietta, with a planned storage capacity of 7 MT, it is planned to be completed within 2 years.¹²

Blumberg Grain anticipates that Egypt will be a strong candidate for building a manufacturing plant and export hub to produce food security technology and systems including equipment and storage buildings for the MENA region.¹³

References

1. United Nations, International Merchandise Trade Statistics, Yearbook 2012, <http://comtrade.un.org/pb/CommodityPagesNew.aspx?y=2012>
2. US Wheat Associates, "Wheat Import Projections Towards 2050", Jan 2011, p.2, <http://www.uswheat.org/uswPublic2013.nsf/xsp/.ibmmmodres/domino/OpenAttachment/uswpublic2013.nsf/8C4E4E65781BB55085257C150061511A/body/Wheat%20Import%20Projections%20Towards%202050%20-%20C.%20Weigand%20Jan%202011.pdf>.
3. United Nations Economic Commission for Africa (UNECA), "Food security in North Africa: Situation analysis and reactions from the States over the instability of agricultural markets", North Africa Office, 2012, http://www.uneca.org/sites/default/files/publications/food_security_in_north_africa.pdf
4. IPAMED, "Tomorrow, the Mediterranean: Scenarios and Projections for 2030", p.131 http://www.ipemed.coop/adminlpemed/media/fich_article/1323859454_Tomorrow_the-Mediterranean-2030_eng.pdf.
5. United States Department of Agriculture (USDA), International Food Security Assessment 2012 – 22, July 2012, <http://www.ers.usda.gov/media/849266/gfa23.pdf>
6. World Bank, FAO and IFAD, "Improving Food Security in Arab Countries", 2009, <http://siteresources.worldbank.org/INTMENA/Resources/FoodSecfinal.pdf>
7. Magnan, Nicholas and Sadler, Marc, "Grain Import Dependency in the MENA region: risk management options", Springer, Feb 2011, http://www.researchgate.net/publication/226684899_Grain_import_dependency_in_the_MENA_region_risk_management_options
8. According to the FAO, global food prices increased at an average of 59% between March 2007 and March 2008
9. The World Bank food price index reached its 2008 peak in early 2011 and has stabilized at about double its 2005 level throughout the first quarter of 2012.
10. Al Masah Capital Limited, "MENA Food Security: Are We Doing enough to feed the Population?", 2011, http://almasahcapital.com/uploads/report/pdf/report_20.pdf
11. Ibid, United Nations Economic Commission for Africa (UNECA), http://www.uneca.org/sites/default/files/publications/food_security_in_north_africa.pdf
12. FAO, "The Grain Chain: Food Security and Managing Wheat Imports in Arab Countries", 2012, http://www.fao.org/fileadmin/templates/tci/pdf/MENA-WB-The_Grain_Chain__ENG_.pdf
13. Egypt's State Information Service website, <http://www.sis.gov.eg/Ar/Templates/Articles/tmpArticles.aspx?CatID=5489>
14. Oxford Business Group, "Cropping Up: Feeding Economic Growth by Focusing on Farms and Farmers", The Report Egypt 2014, <http://www.oxfordbusinessgroup.com/overview/cropping-feeding-economic-growth-focusing-farms-and-farmers>



Prospects for Offshore Agricultural Investment in Achieving Food Security

The 2007/2008 global food price crisis led many countries from Middle East and North Africa (MENA) region (and East Asia) that depend on global food markets to re-evaluate their food security strategies. The idea of secure land elsewhere for national food production rather than rely on global markets (the usual way to acquire food grown in other countries) was born. This is essentially turning to 'offshore' food production.

The logic behind the idea is simple and persuasive. Some countries have abundance of arable land and water, but no resources to develop them, while others have scarcity of water and land but abundance of capital. This creates potential for a win-win situation. The investor country acquires land and is guaranteed access to the food produced in it (and thus avoids the vagaries of global food markets), while the recipient country gets an infusion of capital, infrastructure and know-how into its agricultural sector increasing productivity and also leading to economic development.

Certain MENA countries with constrained supply of arable land and water are increasingly buying or leasing farmlands (in countries with ample arable land, but dearth of capital), growing crops and shipping back the harvest. Qatar, Saudi Arabia, the UAE, Egypt, Libya and Kuwait have made farmland investments outside their borders mainly in Eastern Europe and Africa.

However, for these arrangements to truly be a win-win, it is imperative that the recipient country's citizens are protected from nationalization or expropriation, labor abuses, and loss of their own food security. Many observers feel that this has not happened. This is because many of the land deals have not been very transparent and have been seen as disenfranchising legitimate claimants to land by the investors with the help of a corrupt class of ruling elites. Observers point out that some of the new investors favor host countries where governance is weak, politicians are corrupt, and land rights of existing users are undermined in law and practice. This is one of the key findings of the World Bank report that surveyed fourteen countries across three continents. In short, for many (though obviously not all) investors, it's easier and cheaper to rely on local people being displaced than to engage in negotiations and partnerships with them.

Opponents of this strategy regard it as a form of modern colonization, where regional, international governments and corporations "appropriate the land" with complete disregard to community rights and state sovereignty. The practice has acquired the name "land grab".

Land deals are being seen as human rights issues. Indeed an international arbitration of disputes between investors and national governments shows that investors' rights to export their produce (even in times of food shortage) and to use water (even in the face of rising water scarcity) typically trump the rights of governments to protect their citizens' basic needs. Most government-to-investor contracts do not stipulate that investors sell to domestic markets, and government efforts at export restrictions in times of acute food shortages would likely be illegal under international investment and trade law.

Beyond disenfranchising land owners, critics of the land deals as structured have other ramifications:

- A recent study from the International Food Policy Research Institute (IFPRI) points that women are most likely to carry the brunt of land loss, given their primary role in providing food for household subsistence. Men, by contrast, are most likely to benefit from access to employment in plantations or processing plants. Where people are displaced, the costs of rebuilding livelihoods and ensuring social reproduction fall disproportionately on women, and gender relations are likely to become more unequal as a result.
- Changes in land use may alter the amount of food being produced for local markets, and so might reduce food availability for local community.
- Threats to biodiversity and loss of environmental services constitute another concern. Large commercial deals typically involve the transition from multiple land uses, intercropping and low level use of forest products to forest clearance and mono cropping. Given that much of the continent is projected to become more water-scarce in the future, the impacts of land deals on other water users, now and into the future, are critical areas in land grabbing.



Trends: Offshore Land farm Investments in North Africa

North African countries have opted for a two pronged approach as they seek to use offshoring as a way to secure their food supply. They are investing in farm land in neighboring African countries and at the same time inviting investors to cultivate in their countries¹. Approaches of the some of the more active NA in the land offshoring are discussed below:

Egypt: the two way approach

Egypt is both an investor and a recipient of land investment. Egypt has targeted countries such as Sudan, Uganda and other African countries. 'Big business' in Egypt has been involved in the offshore agricultural investment that has exploded since the 2007-08 crises by acquiring fertile agricultural land and other assets in neighboring countries to the south, in an effort to expand its market share regionally and integrate its investments.²

- In 2011, Egypt, signed a contract with the Sudanese government, allocating approximately 1 Million acres of arable land in Sudan for Egypt to grow primary crops like wheat. The plan is to produce 2m tonnes of wheat a year for export to Egypt. Egypt is also eager to raise livestock there.³



- The Ugandan government has reportedly leased 2m feddans of land (840,127 ha) – a staggering 2.2% of Uganda's total area – in various parts of the country to Egypt, so that Egypt's private sector may come in and produce wheat and maize for export to Cairo.^{4,5}
- The private sector in Egypt has also played a role in buying land offshore, where the Citadel Capital (now Qalaa Holding),⁶ has signed a contract with the Sudanese government in 2007 leasing 106,680 ha of agricultural land to produce wheat, however until 2011, only 4,382 ha has been cultivated, as per the company's yearly report of 2012. In 2012, the company developed an additional 2,838 ha of farmland and cultivated around 2,023 ha of hybrid sorghum in 2012, raising the total use of its agricultural investment to 6,893 ha.⁷
- Egypt itself has been involved in leasing its land for other rich Arab states or investors, such as Saudi Arabia, Kuwait and UAE. In 2014, Egypt announced plans to lease 25,000 ha of agricultural land to Arab investors in a plan to sustainably develop the country's agriculture sector.

Libya: total dependency on offshore investments

Prior to ousting the Libyan president Moamar Gaddafi, MALIBYA, a Libyan company, has been allocated 100,000 hectares of land in Mali. The project was expected to be a multifunctional encompassing farming (in particular rice production with around 200,000 tonnes produced a year), livestock farming and industry in addition to crops. Libya has been investing in wheat farming in Ukraine and Zimbabwe, as well.

Algeria: restricted investments

Algeria plans to open up its farming sector to foreign investors. Algeria reformed its land laws in 2010 to allow private leasing of agricultural land, most of which belongs to the state. Foreigners, however, will not be allowed to own agricultural land, except as minority shareholders, in partnership with domestic firms. Algerian law requires that foreign business partner with Algerian firms and limits any stake they take in an investment project to 49%.⁸

Morocco: leasing land to expand agricultural sector

The Moroccan government aims to lease 600,000 hectares to other countries. Among the countries that have invested in projects in Morocco are the United Arab Emirates, France, Portugal and Spain. Other countries have also showed interest in investing in this framework, such as the United States, Belgium, Argentina, Gabon, Senegal, Tunisia, South Africa and Australia.

By the beginning of 2014, 31 foreign projects have been approved by the program, with a total land lease of 7,800 hectares. The leased land may be used for a period of more than 40 years, with the possibility for contract renovation, and the conditions for participating in the process are the same for Moroccans and foreigners.⁹

Risks of Offshore Land farm Investments

Though many countries in MENA continue to pursue land deals, this has not been without challenges for investors. Securing wheat supplies through offshore production of wheat is complicated, and is in its early stages of implementation, depending on the uncertain collaboration of governments and firms.

There are potential political risks associated with acquiring agricultural land in other countries. For example, in **Egypt** courts overturned land purchases by both UAE and Saudi companies in 2011 after the outbreak of civil unrest.

Bureaucratic slowdowns in host countries are also a key challenge. For instance exporting a container of food requires 35 days from the Sudan. More importantly capital locked up in land purchases and long-term leases cannot easily be freed up to buy food from other suppliers when there is bad weather or political disruptions in the host country.

It has been pointed out that the implementation of offshoring projects in less developed countries has been notoriously slow due to poor infrastructure, conflicts over land ownership claims, and unstable power relations.

Way Forward

The potential for creating a win-win situation still exists. However, the many bad land deals and the resulting bad publicity has created an atmosphere of distrust that will make it harder for transparent and well-meaning governments/investors on both sides to work in partnership and conclude deals that will improve global food supply.

North African governments and the MENA region in general need to go back to the drawing board and rethink their engagement strategy. Sub-Saharan Africa has the largest uncultivated arable land in the world. Putting this land into cultivation has the potential to improve livelihood and improve food security globally. Putting this land into agriculture will require considerable resources which many poor countries lack. Yet many MENA countries are flush with capital.

North African governments and the MENA region in general need to go back to the drawing board and rethink their engagement strategy, as Sub-Saharan Africa has the largest uncultivated arable land in the world



Creating win-win solutions will require more than capital, sound practices are needed, and this will be created through deals that address recipient countries' agricultural priorities and this includes addressing their food security concerns. In addition, to assisting host countries to utilize agriculture as a spearhead for broader economic transformation.

Some of the other considerations that MENA countries need to bring to the table include:

- Egypt has great expertise in agriculture. It has some of the highest yields in the world in rice, cotton, and wheat. Many countries in Sub Saharan Africa (SSA) are struggling with low yields and also huge food imports bills. Egypt can leverage it's know how to SSA.
- Mechanization in SSA is very low. Less than 10% of land is cultivated using tractors. This again results in low yields. Counties in MENA have resources to help in establishing tractor assemble plants or working with local private sector help develop models for developing mechanization centers that can help poor farmers access this services.



- Only 4% of the land in SSA is irrigated, yet some countries in MENA, like Egypt has experience in developing and running irrigation projects. Also Morocco is pioneering new arrangement to leverage public private partnerships (PPPs) in developing irrigation schemes. These are critical skills that can be transferred to SSA.
- Fertilizer use in SSA is very low due to cost which is unaffordable to many poor farmers. Countries in Africa are struggling with increasing supply through subsidy programs that are proving to be very costly. Countries like Morocco are world leaders in production of fertilizers. This can be leveraged in a win-win situation.

North Africa countries need to develop a package that addresses some of the pressing issues of agriculture as they seek to take advantage of offshoring opportunity. More importantly this should be done above board and with involvement of broad range of stakeholders in the recipient countries.

References and Notes

1. It is important to note the scarcity of data pertaining investments in farm land in the region. It is not clear how these projects have developed beyond 2010. In some cases such as Tunisia there is no information at all. As most of the regions previous governments and some current ones are struggling to democratize their political systems, it is extremely difficult to find information related to profitability or sustainability of these projects for the countries who host them. Hence, is the argument that questions their transparency.
2. Democracy in Africa, "Agri-food industry growth and the land grab in north- east Africa", Nov 2014, <http://democracyinafrica.org/agri-food-industry-growth-land-grab-north-east-africa/>.
3. GRAIN Briefing, "The 2008 Land Grabbers for Food and Financial Security", Oct 2008, <http://www.grain.org/media/BAhbBlSHOGZmSSI3MjAxMS8wNi8zMC8xNi8wMV8zNF80MTNfbGFuZGdyYWJfMjAwOF9l9hbm5leC5wZGYGOgZFVA/landgrab-2008-en-annex.pdf>
4. Land Deal Political Initiative, "Governance of Large-Scale Land Acquisitions in Uganda: The Role of Uganda Investment authority", Oct 2012, <http://www.cornell-landproject.org/download/landgrab2012papers/stickler.pdf>
5. Ogalo, Victor, "Foreign Investments in Agriculture in Eastern Africa: A General Overview of Trends and Issues", Oct 2011, http://www.fes-kenya.org/media/publications/FDI/overview-%20FDI%20in%20Agriculture%20in%20Eastern%20Africa_FES_VOO.pdf
6. Farmlandgrab.org website, "Citadel Capital's Plan for East Africa's Growth Business", Jan 2014, <http://farmlandgrab.org/post/view/23092-citadel-capitals-plan-for-east-africas-growing-businesses>
7. Citadel Capital, Leading Change 2012 Annual Report, <http://www.qalaaholdings.com/publications-files/Files/annual-report-2012.pdf>.
8. Farmlandgrab.org, website, "Reining in Land Grabbers or Dumbing Down the Debate", Feb 2013, <http://farmlandgrab.org/post/view/21713-reining-in-land-grabbers-or-dumbing-down-the-debate>.
9. Brazil-Arab News Agency, "Morocco Leases Lands to Expand Agricultural Sector", Jan 2014, <http://www2.anba.com.br/noticia/21862630/agribusiness/morocco-leases-lands-to-expand-agricultural-sector/al> and foreign investors.

Who We Are

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