

# Growing food pyramids in the sand: how sustainable are Qatar's self-sufficiency and foreign agro-investment policies?

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**Abstract:** Achieving food security in the Arabian Gulf is no easy task. Fuelled by petrodollars, the countries largely rely on imports to feed their burgeoning population, making them susceptible to price and supply shocks. This paper begins by examining why food security is so important to the Gulf, narrowing the focus down to Qatar. Its almost absolute dependence on food imports and water desalination make it a distinct and appropriate case study. The two most important strategies through which Qatar plans to achieve its food security- domestic production and foreign agro-investments will be assessed and weighed against their financial, political and environmental costs. Lastly, broader implications including the need to address rampant food waste and poor nutrition will be discussed, issues that are currently side-lined but without which no true sustainable food security can be achieved.

*Keywords: food security, Qatar, Arabian Gulf, agro-investment, food sovereignty*

## Introduction

Sustainability in the Arabian Gulf is the quintessential *contradictio in terminis*. Boasting some of the world's highest per capita incomes (WorldAtlas, 2016), carbon and water footprints (WWF, 2014), obesity and diabetes rates (WorldAtlas, 2015; IndexMundi, 2014), all while simultaneously having least renewable water and arable land resources (WRI, 2015; WB, 2013), the lavish cities of Qatar, Oman, Kuwait, Bahrain, the United Arab Emirates, and Saudi Arabia have been appropriately labelled as "Cities of Salt" in a popular Arab novel (Munif, 1989). The resource curse of fossil fuel wealth is endemic in the Gulf, funding unprecedented growth and allowing the region to surpass the constraints of its natural carrying capacity (Saif *et al.*, 2014). The Gulf faces unique challenges: blessed with sufficient financial resources flowing in from oil and gas exports, but cursed with arid land and acute freshwater shortage, they rely heavily on food imports to sustain their booming populations.

However, a country with low food self-sufficiency can still score high on food security as long as it is able to finance the necessary food imports, which is, indeed, the case of the Gulf rentier states (Babar & Mirgani, 2014). Although the Gulf countries are quite similar in many socioeconomic aspects, the quest for food security reveals different ideological preferences; while the UAE mainly seeks food security through land investments abroad, Qatar is backing both domestic production and foreign agro-investments, whereas Saudi Arabia is phasing out its domestic wheat production- while having the region's biggest dairy industry (Shadbolt, 2013). The apparent policy contradictions could partially be explained by arguing that the notion of food security is often conflated with that of food sovereignty in the Gulf (Babar & Mirgani, 2014). Although food sovereignty was first envisioned as an activist movement opposing state-owned agricultural operations, and taking control of local food production away from the government, it is precisely how it has been operationalized in the Gulf states, referred to by Harrigan as "macro food sovereignty" (2014, p.12). Thanks to their investment in local and foreign agriculture, none of the Gulf countries are facing threats of hunger (GHI, 2015); in fact, Global Food Security Index puts Kuwait, the UAE, and Saudi Arabia among the top 30 most food secure countries in the world (EIU, 2015). So why do food security and food sovereignty fair so high on the regional political and economic agenda then? Perhaps an even more pressing question is: how sustainable are their investments when the oil money runs dry? If economic diversification does not bear fruit, Gulf rentier states will not be able to afford the imports and ensure food security, thereby threatening the legitimacy of the existing ruling bargain (Woertz, 2013a).

### **Why does it matter?**

What would happen if the Gulf of Mexico 2010 oil spill disaster were to happen again, only this time in the Arabian Gulf? For the oil exporting countries of the Gulf basin that hold about 47% of the world oil reserves (BP, 2015) this is a realistic threat, and a vivid reminder of the 1991 Gulf War, when hundreds of Kuwaiti oil wells were set ablaze, causing irrevocable damage to the marine and land biota (Brans, 2001). Gulf countries rely heavily on desalination for potable water, with smaller states such as Qatar almost entirely dependent on it (99.9%) to meet their drinking water needs (Al Malki, 2008). Therefore, any kind of threat to the integrity of Gulf waters is likely to leave grave consequences on the security of industrial, residential, and agricultural sectors.

The interdependence of oil and food forms part of Gulf's collective memory spanning back to 1970s, when, as pointed out by Woertz (2013a), the United States considered forming a grain cartel equivalent to OPEC to counterbalance the Arab oil embargo at the time. This threat incited Arab countries to invest in Sudan as the

region's breadbasket, an agro-investment policy that was revived in the wake of the recent global food crises, and further expanded to include investments in many other developing (such as Pakistan, India, Vietnam) and developed countries alike (Australia). Far beyond hypothetical oil spills and political threats, the oil-food nexus manifests itself daily through the global price of oil, which in turn reflects the Gulf states' ability to afford food imports, as well as domestic food production. When the 2008 global food crisis shook the world and triggered bread riots in the Middle Eastern countries such as Egypt, Yemen, and Jordan, Gulf countries were rather cushioned off with the price of oil above \$100 per barrel (Woertz, 2013a). The 2010 drought and food crisis had a multiplier effect, feeding the fire of the Arab Spring; inefficient food subsidies led to riots in Egypt, while millions of Syrian farmers were forced to migrate to urban areas and compete for menial jobs due to years of failed crops (The Economist, 2012). Gulf's reaction was to increase subsidies, public sector salaries, direct cash transfers, food price controls (Breisinger and Al Riffai, 2011).

Offsetting another global food crisis with generous subsidies that form part of the ruling bargain would not be as easy today, with the oil price kept well below \$50 per barrel, and most of Gulf countries grappling with fiscal deficits and painful cuts (Saadi, 2016). Hence, self-sufficiency and foreign agro-investments began to (re) surface as options to mitigate importation risks.

### **Qatar National Food Security Programme**

Around the same time when Saudis began phasing out domestic production in 2008, neighbouring Qatar announced the formation of its National Food Security Programme (QNFSP), with the goal to "secure sustainable, quality foods for the nation of Qatar from both local and international sources", through a balance of self-sufficiency, foreign agro-investments and long-term bilateral arrangements for food imports (Abrahams, 2013).

The Programme was charged with developing a holistic master plan for Qatar's long-term food security, such that would take into account water scarcity, renewable energy, public-private and international partnerships (Abrahams, 2013). The Programme delivered its mandate in 2013, upon which it was dissolved and reorganised into the Implementation Committee, tasked to work alongside government and private sector entities on carrying out the QNFSP's suggested changes, focusing on diversification of international trade and investment, as well as improvements of the domestic food market and production (Gulf Times, 2014).

As part of its recommendations, infrastructure and domestic market regulation were emphasized as needing urgent attention. Doha Central Market, built in 1981, is the only wholesale market in the country, through which all fresh produce must pass en route from producers to retailers (Seyfert *et al.*, 2014). Since it has outdated

facilities with inadequate cooling storage capacity, food waste and quality reductions that shorten food shelf-life are endemic in the local market (Suresh, 2014). To overcome this barrier, QNFSP's recommendation to upgrade the existing and build new markets has been acknowledged, with construction of three new central markets already underway, set to open to public by the end of 2016 (Fahmy, 2015). Unlike Oman and Saudi Arabia, which already established a 6-month strategic food reserve back in 2010 and 2013, respectively (Woertz, 2013a), Qatar is yet to build facilities for its own strategic food reserve. This vulnerability was highlighted by QNFSP in its master plan, urging for the creation of a strong and sustainable reserve system (personal communication, March 30th, 2016). Likewise, the current national water reserve of 1.8 days (Oxford Business Group, 2012) needs to be augmented, and a project by Qatar General Water and Electricity Corporation (Kahramaa) is already underway to build mega reservoirs that will hold a seven-day strategic water storage (Kahramaa, 2015).

In addition to reforming local market and constructing strategic reserve facilities, growing food locally is deemed essential by Qatari decision makers, as they currently import more than 90% of its food (Babar & Mirgani, 2014). Figure 1 illustrates the dependence on imports for major food groups, and current local production capacities. The country is particularly vulnerable due to the fact that nearly all food imports come through the Saudi land border and the Strait of Hormuz, with only a small fraction is flown in via air (Ismail, 2015). In the wake of ongoing tensions between Saudi Arabia and Iran, as well as the overall geopolitical instability of the region, it becomes evident that the two entry points make Qatar extremely susceptible to import disruptions.

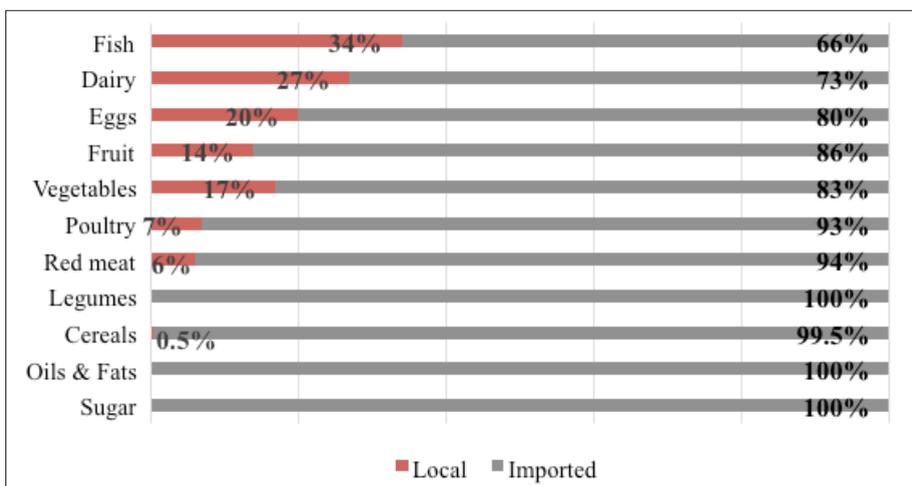


Figure 1 - Local vs. imported food supply in Qatar

Source: Adapted from AOAD Arab Agricultural Statistical Yearbook (2011) and Alpen Capital (2012)

## Domestic production

The QNFSP aims to meet up to 40% of the country's total food demand with domestic production, using highly efficient agricultural technology to offset natural barriers of arid land and water scarcity (Scott, 2014). However, greening the desert might prove to be a fallacy, both financially and physically. Local farming contributes a mere 0.1% to the country's GDP (Ismail, 2015), while consuming almost 60% of total national water use (Saif, 2012). Mohtar and Daher (2014) used the Water-Energy-Food Nexus Tool ([wefnexustool.org](http://wefnexustool.org)) developed by Chatham House to generate different development scenarios, and calculated food self-sufficiency options for Qatar based on various trade-offs between water, energy, land and financial resources. Their analysis shows that a 25% increase in self-sufficiency for eight select produce (tomatoes, cucumbers, potatoes, carrots, green onions, watermelon, lettuce and eggplant) would require twice as much water, energy, and finances, and almost four times more land in Qatar (see Figure 2). While their analysis does not specify the source of water or type of land and energy assumed, such estimations need to be kept in mind when proposing self-sufficiency in a desert environment.

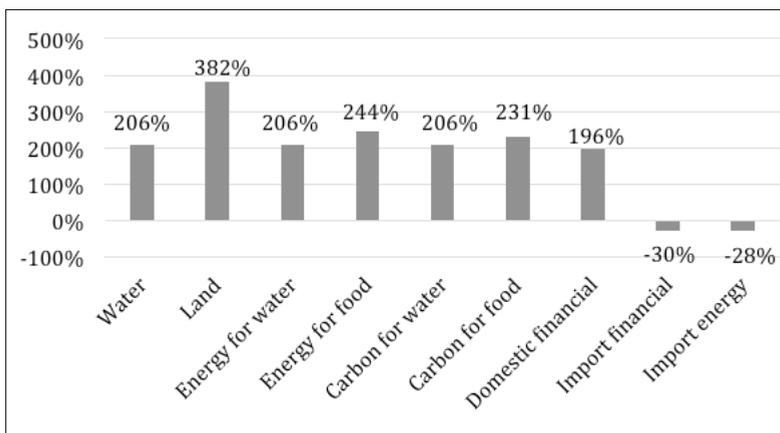


Figure 2 - Additional resource needs for a 25% increase in domestic production for select produce (percent change)

Source: Mohtar and Daher (2014)

Since only 9,000 hectares of the nation's arable land (less than 6% of total land area) is currently cultivated, the government plans to double the number of active farms (Ismail, 2015) in a bid to increase yields and local agricultural base. While there is room for expansion, the marginally productive local agriculture relies heavily on direct subsidies, while fast-depleting groundwater used for farming is free of charge and therefore represents a further, indirect subsidy, making domestic agriculture

unprofitable for investment. Implementing demand-side control measures such as subsidy removal may take many years to implement, as it would infringe upon what the locals have come to consider their birth right, threatening the legitimacy of the social contract between the royal family and the people (Mansfeld & Winckler, 2007). Developing a sustainable water source for domestic agriculture is imperative if a long-term self-sufficiency is to be achieved, since current reliance on groundwater aquifers is four times the natural recharge rate (Abrahams, 2013). Since most of the water is used for producing fodder for dairy cows and poultry, the potential of tertiary treated wastewater for fodder irrigation has been increasingly emphasised, resulting in the use of 27% of treated wastewater for fodder irrigation alone (El Emadi, 2014). However, treated wastewater made up only 19% of the total water supply for agriculture in 2013 (MDPS, 2016), with the rest coming from depleting groundwater sources. The possibility of using treated water as a source for other agricultural purposes must also be evaluated, all while tackling cultural attitude barriers and educating the people, as such water is commonly perceived as unfit for human consumption (Darwish et al., 2014).

In addition to relying on treated wastewater for irrigation, Fahad al-Attiya, the former chairman of QNFSP, has time and time over emphasized that the country's plan is to develop domestic agriculture under the condition that renewable energy is used to power desalination, as the most sustainable form of water supply (Baker, 2012). While a valid proposal in theory, solar-powered desalination comes with its own cost, both financial and environmental. The process of desalination itself produces vast amounts of brine water, which gets discharged back into the Gulf, along with processing chemicals (Baker, 2012). So far, there have been no longitudinal and cross-national studies that assess the long-term consequences on the marine life, which makes it an even more urgent concern. While using renewable energy to power desalination would vastly reduce carbon emissions, the reality is that it is still a very energy intensive process; estimates quote that 1.8 GW of generation capacity is needed to meet Qatar's agricultural ambitions, requiring about 4,000 hectares of land to be covered in solar panels (Baker, 2012). However, since the delivery of the master plan in 2013, there have been no further public announcements on the near-future implementation of such solar-powered desalination projects. This realization makes it obvious why the current focus is on increasing the utilization of treated wastewater and highly-efficient technologies such as hydroponics.

Hassad Food, the 3bn dollar-worth agricultural conglomerate and investment arm of the country's sovereign wealth fund, has been financing Zula Oasis, a highly-efficient hydroponic greenhouse pilot project at the outskirts of Doha (Burwood-Taylor, 2015). It began in 2013 in collaboration with Primaflor Group from Spain, requiring no soil and recycling 100% of the irrigated water (Walker, 2015). The project was proven successful in growing select vegetables in harsh climatic conditions of the Qatari desert, recently yielding 82 pounds per square meter and exceeding all expectations (Walker, 2015). The focus on horticulture in domestic agriculture is

a prudent move in the right direction, and using hydroponics and highly efficient greenhouse systems is a testament that Qatar is not headed down the same agricultural fiasco as Saudi Arabia was with its wheat cultivation. However, as long as local farmers are provided with free access to the severely-depleted groundwater, the pressure on aquifers and unsustainable irrigation practices will continue to mount (Bailey and Willoughby, 2013).

### **International investments**

Although Qatar's admirable strive for self-sufficiency is aimed at reducing its dependence on imports from 90 down to 60 percent (Ismail, 2015), it will still require more than half of all food consumption to come from abroad. Therefore, developing long-term, stable importation routes is essential for achieving food security. Currently, Qatar's importation base is quite small, relying on a handful of countries to meet most of its food demand. Saudi Arabia is the single largest supplier, providing Qatar with 65% of dairy and 41% of its fresh produce needs; together with Pakistan, India, Brazil, Australia, Jordan and the UAE, they meet the total of 80% of country's fresh and frozen food demand (QNFSP, 2013). Relying on such a limited number of suppliers leaves the country exposed to import disruptions, with an evident need to develop stronger 'grain ties' with a diverse base of food exporters (Tetreault et al., 2014). In addition to strengthening commercial and diplomatic ties, Qatar is one of the biggest regional investors (along with Saudi Arabia and the UAE) in agricultural land abroad.

The controversy surrounding land purchase deals in some developing countries creates an unattractive investment atmosphere. Such was the case of Qatar's 2009 project in Kenya, when a flurry of criticism and local resistance led to cancellation of a 40,000 ha land lease deal (Ismail, 2015), while a 2012 Saudi project in Ethiopia led to violent attacks and fatalities (Woertz, 2013b). Qatar can't afford to invest in countries with dubious human rights records and potential displacement and disownment of local farmers, as the country is already battling reputation issues regarding the treatment of migrant workers at home (Woertz, 2013c). The issue of human rights expands beyond farmer treatment and land-ownership, and into quenching the Qatari thirst for "virtual water", embedded in crop and livestock production, which is particularly troublesome in African countries that are themselves struggling with water access. It is not land that is missing in Gulf countries, but sustainable source of water, and considering the essence of water to crop and animal growth, it would be more appropriate to label their land acquisitions as water grabs (GRAIN, 2012).

All of this has understandably made Qatar extremely cautious about investing in developing and politically unstable countries. Already in 2009, Nasser Al Hajri, the Chairman of QNFSP, made it clear that their strategy is different, and that they are not in the business of profiting from someone else's misfortune, as the deals in developing nations are often not "...win-win situations and we don't [want] to be in

a situation where the rich are taking away food and land of the poor”, and while not entirely against land acquisitions, he claimed that “investing into existing businesses is the right choice” (Bakr, 2009). Yet, joint ventures do not always turn out successful, as illustrated by the 2013 investment in a rice production company called the Indian Bush Food Overseas, which forged financial statements to lure Qatar into buying shares and investing \$100 million, leaving them to now grapple with law suits and losses (Malviya, 2014). Qatar's by far biggest foreign venture has been in Australia, where stable and welcoming investment atmosphere has allowed for purchasing and leasing a combined total of 300,000 ha of arable land, with both grain and animal production (England, 2014). Table 1 provides a summary of Qatar's most important agricultural investments abroad since the establishment of Hassad Food in 2009.

*Table 1 - Qatar's key foreign agricultural ventures.*

DATE	KEY DEVELOPMENTS
25-2-2015	Hassad Food announced negotiations with Brazil over purchases of sugar cane mills and poultry assets
09-02-2015	Hassad Food acquired 33% minority equity in Oman's Al Saffa Foods poultry company
04-12-2014	Hassad Food files a First Information Report (FIR) against Bush Foods Overseas for forging financial statements and inventory records to lure them into investing
17-10-2014	Hassad Food announced a joint investment plan with Turkey worth \$500 million in poultry, mutton and dairy sector
17-6-2014	Hassad Australia, a subsidiary of Hassad Food, purchased 14,000 ha of rural South Australian farmland- adding to the total of 250,000 ha already purchased by Hassad Food since 2009
03-04-2013	Hassad Food acquired 51% (worth \$100 million) of Bush Foods Overseas, an Indian basmati rice company
2012	Hassad Food established Senwan Pakistan, a subsidiary miller company that processes rice from local farmers and companies and sells it to Qatar's market
09-2009	Hassad Food established Hassad Australia, a subsidiary company to manage \$500 million- worth sheep and grain properties all over Australia, accumulating well over 300,000ha in separate purchases over the following years

Sources: Adapted from Mitra (2013), Beer (2014), El Dahan (2014), England (2014), Malviya (2014), Smith (2013), Varghese (2015), Hassad Food (2015). “Hassad Food of Qatar Acquires an Equity Interest in A'Saffa Foods, Oman”. Retrieved from <http://www.hassad.com/English/MediaCenter/NewsCenter/Pages/Hassad-Acquires-an-Equity-Interest-in-A'Saffa-Foods-Oman.aspx>

Mahendra Shah, the Director of QNFSP, argued that there is indeed potential for win-win, if investment is made in lands that were marginally operated and had potential to improve crop yields by introducing improved mechanization and management techniques. He proposed a production sharing system, where the yields would be portioned between the investor and host countries, with an additional portion to be sold on the local market, and funds used to reinvest in the communities, thereby strengthening ties and providing urgently needed means for sustaining development in Asian and African developing countries (Shah, 2010). However, Fahad Al Attiya realized that even such production sharing agreements are not 100% fool-proof and ensure food security, as the receiving nation can always turn their back in times of crises. He argues, therefore, that Qatar's ambition is not to invest around the world for the mere purpose of feeding their 2.5 million population, but to "go in and invest to service the country, and the region - and the globe at large" (Robertson, 2014). Claims to promote global food security align with Qatar's desire to position itself as a global soft power; hence, it paved the way in establishing the Global Dry Land Alliance, a platform for arid nations to share knowledge, finances and technology for improve agricultural outcomes (Woertz, 2013c). Fostering mutually-assured import partnerships and land investments is not a zero-sum game, and considering the fact that such deals are relatively nascent, more time is needed before making conclusive arguments regarding their efficacy in providing long-term win-win value.

### Gaps in policy

While Qatar has been focused on increasing physical supplies of food, both domestically and globally, it has left out some obvious and visible food security issues: it is not only about meeting the demand with ever-growing supply, but the demand itself needs to be revised and tackled. Woertz (2013a) claims that the main food security challenge in the Gulf is lack of micronutrients; indeed, Qatar and other Gulf countries top the world score on obesity and diabetes rates, with 8% of Qatari children stunted, 26% iron deficient and 40% overweight (ElObeid & Hassan, 2014). In addition, it makes no economic or ecological sense to keep producing food without addressing rampant food waste. The low quality of much of the fresh fruit and vegetables moving through the local market translates into much higher rates of waste for the economy – estimated at around 14% on a pre-consumption basis, against 10% for other Middle Eastern benchmark nations (Adema, 2016). Quality problems are estimated to cost consumers up to QAR 900 million a year (QNFSP, 2013), excluding additional post-consumption waste due to low quality, as well as the culture where throwing away left-overs is considered a norm. While

studies on food waste and nutrition in Qatar are gradually proliferating (Madi, 2015; Solder, 2013), policy is yet to recognize this wasted opportunity to address food security via regulating and improving demand.

## Conclusion

Qatar has been making great strides in securing stable food supply for its population. Its leaders are well-aware that reacting to food supply shocks with price controls and subsidies is only a short-term solution; hence, sensible investments in domestic agriculture focus on horticulture, while negotiating stable import routes and foreign ventures ensure meeting grain and meat needs. What about environmental sustainability? The true test of long-term resilience of their domestic and foreign agro-projects is whether concerns surrounding natural resources used (soil and water, as well as greenhouse gas emission levels) are given appropriate leverage. Lack of published data on foreign agro-investments in terms of yields and equity, as well as continued reliance on groundwater for domestic production with promises of renewable energy desalination and large-scale hydroponic and similar solutions yet to materialize, give a negative answer. This exposes the government's aim in ensuring food security and sovereignty as still relatively short-term oriented and pragmatic, prioritizing stability of the current socio-political system, as opposed to mitigating their environmental impacts. Meeting 40% of demand with domestic production that relies on unsustainable water sources, and diversifying trade routes and partners will not suffice to ensure truly sustainable food production beyond the oil era.

The oil-food nexus is yet to be decoupled, as the country's ability to grow and import food largely depends on its oil and gas revenues, which is not viable in the long run. As long as this is the case, Qatar's food security will not be sustainable in either financial or environmental terms.

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