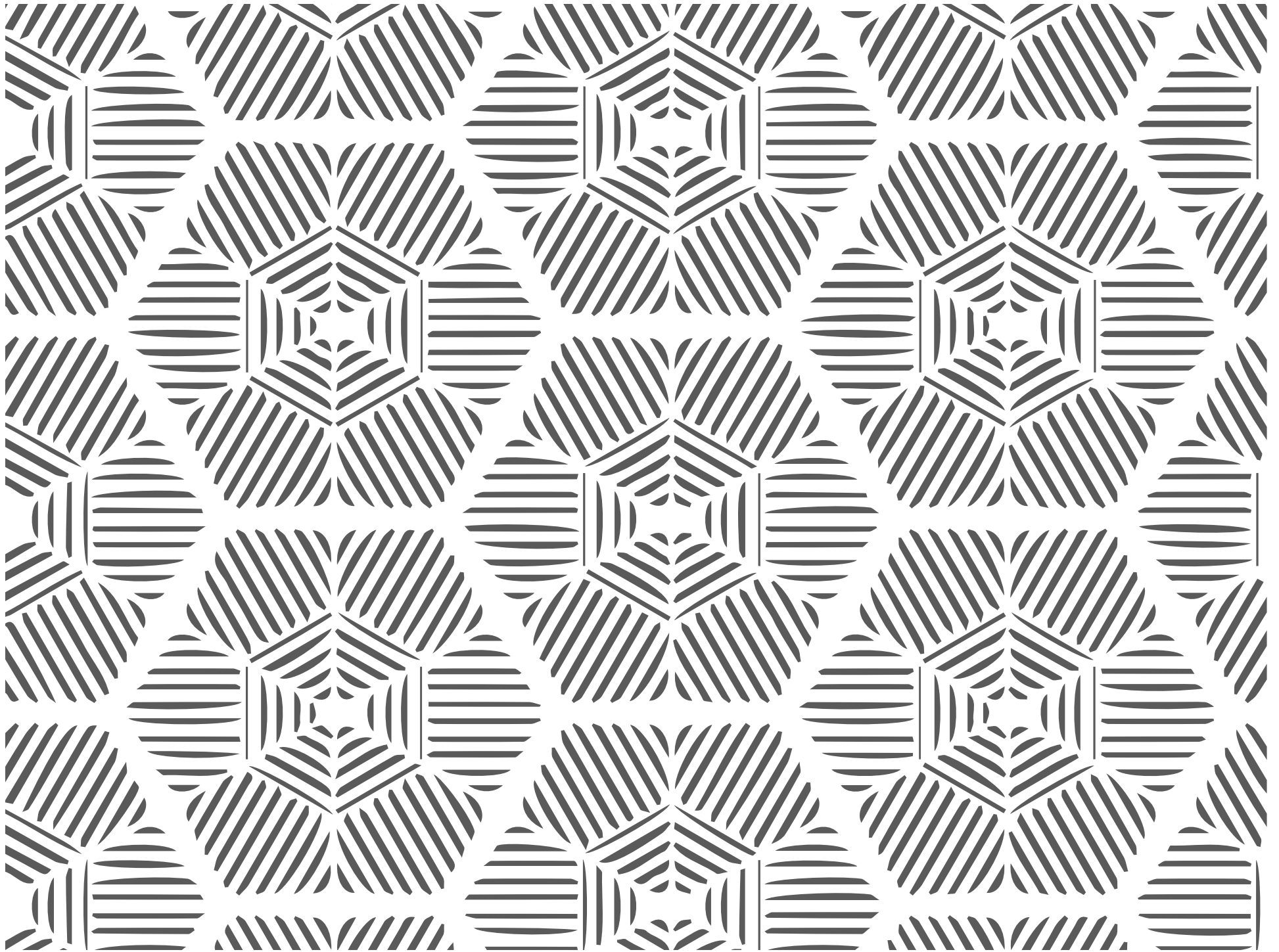




THE KIFITA FARM PROJECT

AGRIBUSINESS STRATEGIES IN THE DEMOCRATIC REPUBLIC OF CONGO



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Executive Summary

This study was executed on behalf of Kifita International LLC., a not-for-profit organization turned agribusiness in the Democratic Republic of Congo, to explore potential agribusiness strategies for the Kifita Farm in the southern Katanga region of the country.

The Democratic Republic of Congo (DRC) is a country with an enormous potential for growth. With a surface area of 2.3 million square kilometers, it encompasses over 80 million hectares of arable land. Despite its' immense agricultural wealth, the DRC has been labeled a low-income food deficit country (LIFDC) for many decades, where the country has little to no money to import nutritionally beneficial food let alone produce it for its people. Armed conflict, ongoing insecurity, and population displacement are the primary drivers of food insecurity in DRC.

With a majority of the employed population engaged in agriculture and only a fraction of the country's arable land under cultivation, the DRC has a huge untapped potential to increase food production within the country. Agribusiness holds the key to unlocking this potential and quelling food security issues. Using the Kifita Farm as a future implementation site, this study explored four potential agribusiness strategies – organic agriculture and livestock production; organic fertilizer, pesticide, or animal feed production; supply chain improvement; and agricultural research and development.

The analysis showed that a food hub model (supply chain improvement) had the greatest potential to address food security in the Katanga province and maximize profit for all stakeholders. It is recommended that Kifita International LLC. invest into a regional food hub that leverages the output of existing land users to transport produce to market before venturing into alternative agribusiness strategies.

Introduction

Africa represents the “last frontier” in global food and agricultural markets (McMillan et al., 2014). From China, India, and Latin America, the agricultural sector has helped spark employment creation, land productivity and an eventual shift to agro-related industries, known classically as ‘structural change’. This ‘structural change’ enables countries to diversify away from agriculture to modernized economic sectors such as manufacturing or tech-focused sectors, increasing household productivity and household purchasing power. However, many challenges inhibit the progression of the prevalence of structural change in Africa, ranging from policy reform to inadequate public and private investment in agribusiness and physical infrastructure.

The Democratic Republic of Congo (DRC) is a country with an enormous potential for growth. With a surface area of 2.3 million square kilometers, it encompasses over 80 million hectares of arable land. Despite its’ immense agricultural wealth, the DRC has been labeled a low-income food deficit country (LIFDC) for many decades, where the country has little to no money to import nutritionally beneficial food let alone produce it for its people. Sadly, many policies and initiatives go towards keeping kleptocratic and bourgeoisie influences in power as opposed to investing in human development. The agricultural sector employs approximately 60% of the total labor force and accounts for 1.5% of total exports (Leete et al., 2013), producing food crops (cassava leaves, maize, and rice) and cash crops (coffee, sugar cane and cocoa). The added transaction costs that come from imported fertilizers, seeds, and elongated travel because of the absence of paved roads to local markets discourage smallholder farmers to engage in market activity. With rising global food prices, poor communities face additional challenges to accessing healthy foods.

Agriculture and agribusiness together are projected to be a US\$ 1 trillion industry in Sub-Saharan Africa (SSA) by 2030 (World Bank, 2013). Agribusiness is defined as organized firms devoted to commercial agriculture that involves transforming smallholders to market participants. In addition to catalyzing economic growth on the national level, agricultural production has the greatest potential to reduce poverty where agriculture is a high share of GDP and the majority of the poor are in the rural sector. With investment interest peaking, the agricultural sector in the DRC presents new opportunities for not only poverty reduction and food accessibility, but also possible returns on public or private investment in agribusiness.

While the effectiveness of agricultural growth in reducing poverty holds promise (see de Janvry, 2010), the maximum return on public or private investment is still incomplete and conditional on context. The big question becomes – what are the best strategies to investing in the agricultural sector? To analyze these issues, Kifita International LLC. is conducting research on financially sustainable models of agricultural production. The primary purpose of this capstone project report is to assist the Kifita Farm project steering committee in understanding best practice strategies to agribusiness in the DRC today. This report reflects the amalgamation of research reviewing existing literature on the topic and gathering information from case studies throughout Africa, Latin America and the United States. Armed with the knowledge necessary, we can recommend changes to the agricultural production model that exists today and offer alternatives; identify key missing information; explore best practice strategies that have yet to be considered; and choose the most cost effective scenario that will be most advantageous for the local community, stakeholders, and investors.

About the Project

Background

The Kifita farm was born in 1953 by the willingness of Pasteur Joel Bulaya Ngoy-A-Sanza and Sophie Ilunga Ndayi Bulaya. Today, Kifita International LLC manages the farm with 12 employees supervised by the technician agronomist. The key stakeholders of the not-for-profit group have expressed their interests in establishing a maize-producing agricultural farm in the Katanga province. Through this discussion, the maize-production model can be critiqued, which has become outdated and obsolete over time, while determining which alternative production models can be sustainable long-term.

Kifita International LLC. owns and manages approximately 900 hectares (3.5 sq. miles) of arable land located 65 kilometers from the city of Kabongo. It is bounded on the South by the river Lomami, runs alongside the Congo River for about 3 kilometers, on the West by the river Kifita and to the East by the river Kandwe. The Haut-Lomami district is well known in the Katanga province as having a huge untapped agricultural potential. Spanning more than one hundred square kilometers (108.23 km²) and more than one million inhabitants, the Haut-Lomami district is the 2nd most populated and 3rd largest district in the Katanga province.



Purpose

The project stakeholders aspire to increase Kifita farm productivity and efficiency through improved agricultural practices. In order to effectively embark on this socially minded business venture, an adequate understanding of the current market, political and environmental conditions must be captured. In order to give concrete recommendations to the stakeholders, there needs to be a comprehensive understanding of agricultural innovation in Africa and other global markets; current economic market for food and cash crops within Lubumbashi, Likasi, Kolwezi, Kalemie, and Mbuji-Mayi; institutional framework and local policies; local-level infrastructure (roads, transportation logistics, electrical capacity, water availability); financing development from investors; and the effects of climate change within this very agriculturally rich area.

The stakeholders, who are located in various parts of France, United States and Taiwan, expressed their collective motivations to commercialize agricultural production initiatives – increasing food distribution and availability, providing employment opportunities and higher wages, and increasing inter and intra-regional trade flows. All of the stakeholders are apart of the Congolese diaspora, being born in the DRC and migrated to other parts of the world or first-generation citizens of other countries. Through initial conversations between project stakeholders, the focus has been on the mass production of cassava, maize, and beans. However, in order to promote project sustainability over time, alternative solutions must also be addressed. Many of the stakeholders were open to mixed farming techniques and soil nutrient cycling, as to promote profit maximization and maintain soil fertility. Livestock production, such as cattle and goats, was also a high priority development opportunity. In order to do that, public-private partnerships and capacity building through education and skill sharing could prove advantageous as complementary initiatives.

As social entrepreneurs, the ultimate goal is to provide an economic return on investment for all internal and external stakeholders so that socioeconomic growth can occur within the Kifita region. Overall, the focus for this project is to provide the greatest good for the greatest number of people.

This study focused on the careful investigation of past-applied agricultural projects in Africa, Latin America and the United States, and their effectiveness in inducing access to healthy foods and employment creation. This capstone project seeks to answer a fundamental question: **What are financially profitable agribusiness strategies that could promote socioeconomic solutions in the DRC?**

In addition, other questions will also be explored:

- What are successful agribusiness examples that have reaped success in the Global South (Africa, Asia, and Latin America)?
- Could agribusiness models that have been implemented in the Global North (United States and Europe) be modified to thrive within the DRC socioeconomic context?
- What lessons on project launch from past-applied projects can be used for a KIFITA project pilot program?
- In what ways might the KIFITA project pair existing best practice agribusiness strategies to inform local community development while providing a return on investment for internal and external stakeholders?



Methodology

This capstone project will focus primarily on secondary sources, but tie in primary information gleaned from agribusiness practitioners and key development programs in Africa. Academic literature, development agency publications, and past-applied project reports provided the majority of the background information needed. In order to capture the most current agricultural strategies, the literature review focuses on work done in the past fifteen years. All of the books and articles are written in English. The literature review will be organized thematically by agribusiness strategy: organic agriculture and livestock production; organic fertilizer, pesticide, or animal feed production; supply chain improvement; or agricultural research and development. In order to gain more information on specific models, certain past-applied projects were selected as case studies. The case studies selected are intended to represent models functioning at different capacities in unique geographic contexts with a particular focus on agricultural commercialization and structural transformation.

Also, this report will investigate remittances' role in development, exploring how past projects used diasporic funds to push agribusiness forward. In addition to the literature review, this study incorporates a feasibility study and scenario prioritization scorecard to evaluate alternative agricultural strategies and prioritize them for implementation at the Kifita Farm.

This report provides only a *preliminary* investigation into agribusiness strategies in the Democratic Republic of Congo. It seeks to provide a platform that promotes shared understanding between all internal and external stakeholders to begin collaborative planning of a pilot program launch in late 2017. The aim is to identify 'low hanging fruit' within the agricultural market, secure early business wins, then focus on sustainable approaches to business development. More copious analysis will begin once stakeholders travel to the DRC to begin field research and market analysis. Once fieldwork has begun, it will add first-hand, primary information on the Haut-Lomami/ Katanga regions.

State of the DRC

Background

Whenever the Democratic Republic of Congo (DRC) is discussed, it is reduced to a place of famine, war, struggle and strife. This generalized viewpoint, which in no way applies to the DRC as a whole, is a product of a 'single story' perpetuated by the media and the global North. The story of the DRC is one of colonialist invasions, the export of human capital and forced slavery for development in places around the world and the continued pillaging of her natural resources. Generations later, colonialism has provided opportunities for Congolese individuals to become a part of the 'social and economic elite' by propagating European interests within the country. By promoting these Eurocentric interests, the Congolese elite have intensified the inequalities within the country, specifically in regards to investment in infrastructure and basic urban services (electricity, roads and direct access to drinkable water and wastewater management).

State of Infrastructure

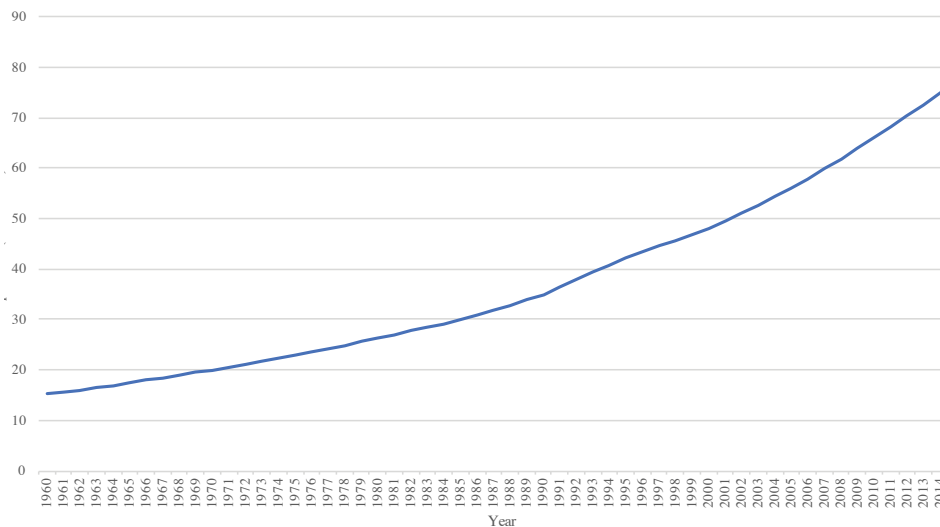
Today, most of the physical infrastructure in the DRC lies in disrepair, which only deepens the inequalities between the social elite and the rest of society. Miniscule amounts of foreign investment flowed into Congo after Mobutu's fall from power – until recent investments from China poured \$9 billion dollars to exchange infrastructure for natural resources (Meyer, 2012). In 2012, only 16.4% of the 66 million people had access to electricity in the Democratic Republic of Congo, a jump from the 15.2% in 2010 (World Bank, 2015). According to the United Nations Joint Logistics Centre (UNJLC), the total road network in 2005 equated to 171,250 km, with only 2,250 km being paved roads, 15,000 km being unpaved, and over 110,000 km being country roads, local roads, or footpaths. "In terms of water supply, only half of Kinshasa's population has direct access to drinkable water... Usually, four to five compounds have to share one water point, which REGIDESO (Régie de Distribution D'eau) does not install in a publicly accessible space" (De Boeck, 2015).

Role of Remittances' in Agribusiness Development

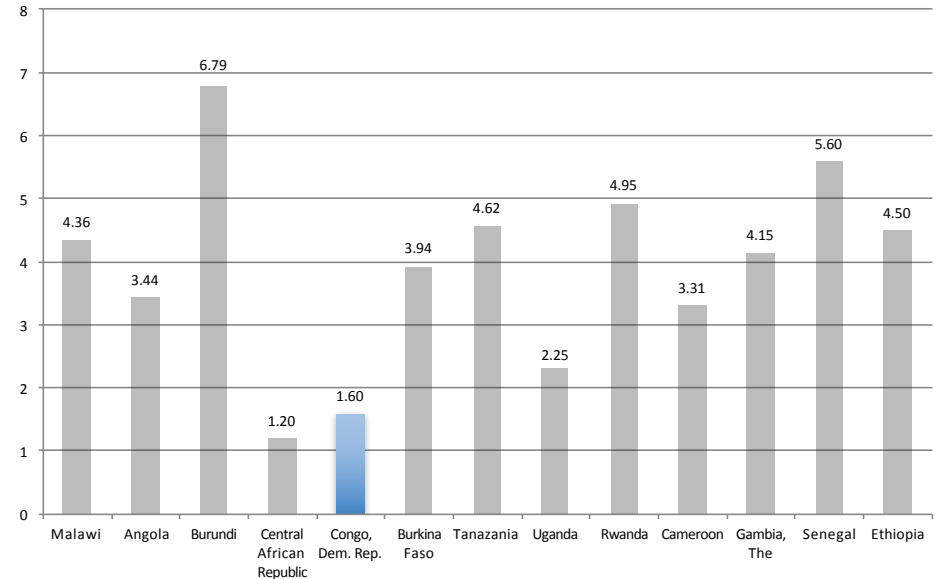
Despite the socioeconomic disparities and shortfalls in the DRC, opportunity looms in the horizon. Congo is much more than its' inadequacies. In order to address the socioeconomic and infrastructural predicaments that ensue, solution providers must find ways to bolster livability at the household-level, working from a bottom-up approach. One approach that holds promise is through the use of remittances, where Congolese migrants who have since moved to other regions of the world send money back home to their families. Through these efforts, diasporic individuals alleviate the economic burdens of family members and help them "cope" with the inadequacies embedded in their physical and economic surroundings. This study sees remittances in a different light; shifting attention to diaspora groups sending money back to invest in businesses and development instead of the personal cash transfers between individuals. Diaspora groups, or home associations, provide the crucial link between international migration and African development (Mercer et al., 2008).



DRC Population, total (in millions)



Government Expenditure on Education, total (% of GDP)



Why Agribusiness?

With World Bank estimates quoting the DRC population at 77.27 million (2015) and rising¹, the need for national food security is needed now more than ever. Paradoxically, the highest percentage of food insecure people (64 percent) can be found in the agricultural sector, leading to severe malnutrition of women and children under the age of five (World Food Programme, 2015). In the 1980s and 1990s, the World Bank and International Monetary Fund (IMF) unveiled structural adjustment programs (SAPs) in Sub-Saharan Africa intent on major structural shifts from the agriculture to industrial sector. Through macroeconomic adjustments, trade liberalization, deregulation, and privatization, these organizations hoped economic activity would increase in the industrial sector as well as in other sectors (Noorbakhsh, 1999). Instead, it caused the de-industrialization of Africa, where human capital had been moved to a stagnating and soon defunct industrial sector. Additionally, it added to an atmosphere of western control over African countries, undermining sovereignty and self-reliance.

With most of the Congolese population being concentrated in the agriculture sector, it becomes increasingly difficult to transition into specialized industry and service positions where little to no education opportunities exist. As a result, this reinforces underemployment throughout the country, with increasing underemployment of the rural and urban areas to 73 and 56 percent, respectively, as well as total unemployment rising to 43 percent (IMF, 2015). The agricultural sector provides a unique opportunity to absorb human capital, providing employment and increasing labor productivity within the DRC. In East Asia, labor productivity gains were large and the rural poverty rate fell sharply (de Janvry, 2009), mainly because output relied heavily on labor-intensive efforts. It is necessary for the DRC to transition into agro-related industries and to focus on more productive sectors of the economy, but a firm foundation in agriculture is needed to jumpstart the rest of the economy.

Market Analysis



With a population of 5.6 million people (WFP, 2014), the Katanga Province has three main marketing basins; Lubumbashi and Zambia markets, Kalemie and Tanzanian markets, and linked markets in the Kasai Oriental Province. According to the Famine Early Warning Systems Network (FEWS NET), [the] Katanga Province is structurally deficit in its most important staple food, maize, and imports large and increasing quantities of maize grain and maize flour from neighboring Zambia. However, as wages, purchasing power increases, and consumer preferences change in the DRC, the need for high-value products and high-value commercial markets also increases. According to the African Development Bank, by 2010, the middle class had risen to 34% of Africa's population – or nearly 350 million people (ADB, 2011). The brief uses a definition of per capita consumption of \$2-\$20 in 2005 PPP US to depict Africa's middle class. Studies by Carlo Azzarri at the International Food Policy Research Institute (IFPRI) demonstrate that 70 to 80 percent of the population lives on less than \$2 per day².



Although purchasing power may be increasing in urban centers such as Kinshasa or Lubumbashi, the region as a whole still requires extensive investment in day-to-day consumption needs. Ada Osakwe, the Chief Executive of Agrolay Ventures in Nigeria, focused her energy to cultivating an investment firm targeting early-stage agribusiness and food-related companies that redefine food production across African consumer markets. Her focus? To promote world-class food products made from home-grown agricultural produce, which provide markets for smallholder farmers, increase local processing efforts to enhance value of agricultural crops, and brand these products for a growing national consumer base (African Business Magazine, 2015). Current market conditions offer early entry opportunities to affect urban/rural poor through low-value domestic markets then transition into high-value domestic markets to target the urban/rural well-off population.

The question lies in how to systematically cut dependence on maize imports and boost local production of these goods and products. Currently, the DRC has almost 1,500-abandoned state and private farms covering 2 million hectares, or 27 percent of currently cultivated land (World Bank, 2013). Many of these lands have been abandoned due to high operational and transaction costs, lack of financing, or obsolete state food initiatives. By leveraging existing lands and partnering with financing, or obsolete state food initiatives. By leveraging existing lands and partnering with local land users, Kifita International can link the Kifita farm with arable lands more proximal to key marketing basins.

Within the food and cash crops market, there is a huge potential for growth. Currently, the Lubumbashi-based African Milling Company (Congo) aims to produce 336 tons of maize meal per day (122,640 tons per year) for the Katanga region, fulfilling only 12 percent of market demand for the country. To date, African Milling Company produces only 10,000 tons of maize, equating to 1% of Katanga's need. As of 2015, food insecurity has reached 57 percent in the Katanga region. To effectively fulfill market demand and promote profit maximization concurrently, Kifita International should target households with poor to borderline food consumption to boost local household purchasing power through cheaper, locally grown alternatives. Today, Global Logistics Cluster and other logistics organizations are committed to the increased infrastructure and connectivity of the country, but no logistics or agricultural input (seeds, fertilizers, pesticides) companies have entered the DRC market.

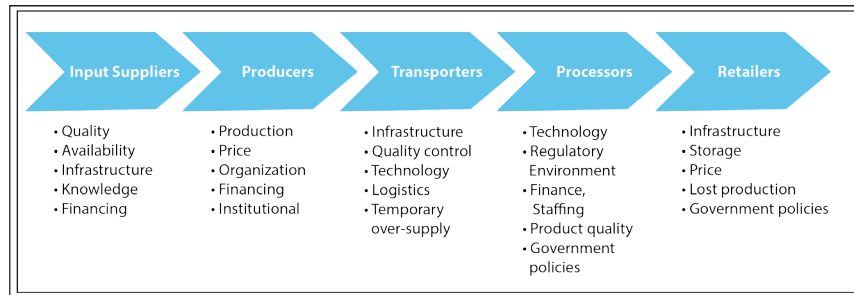
As of 2016, Feronia, Terra and African Milling Company (processing) control most of the agricultural and agribusiness space within the DRC. However, each company focuses on a niche market within a specific geographic location, which leaves a lot of room for new players. Feronia, a Canadian-based company funded through venture capitalists and EU development finance institutions, focuses primarily on palm oil production.

Terra SPRL, another Lubumbashi-based company, focuses on the sowing, growing, and transportation of white maize. African Milling Company, an extension of Terra SPRL, converts white maize crops into high-value products such as bunga, cornmeal and other maize products.

Recent governmental regulations such as changes in taxation, investment in infrastructure, education and training of the workforce have drastically changed economic revenue for these three power players. Feronia has suffered a huge decline in revenue after a decrease in palm oil prices, increased political instability in DRC, and a 2012 land law designed to make certain Congolese citizens land concession owners. Terra and the African Milling Company are struggling to scale up their operations to fill market demands, namely because of the high costs of increased machinery, labor costs, and land acquisition.

As business costs have increased, so have the needs to find complementary forms of financing and investment. From 1990-2010, foreign direct investment (FDI) increased dramatically, and continues to rise within Africa. Financial institutions, ranging from sector-specific providers, cross-cutting providers, and financial providers, are increasing their agricultural finance sectors to increase access to finance within emerging markets. Once a comprehensive business model has been designed, Kifita International can look to capture financing and begin a pilot program initiative. The lack of reliable information on potential suppliers and access to distribution prevents thorough market analysis but it provides opportunities for copious information gathering during future field research analysis.

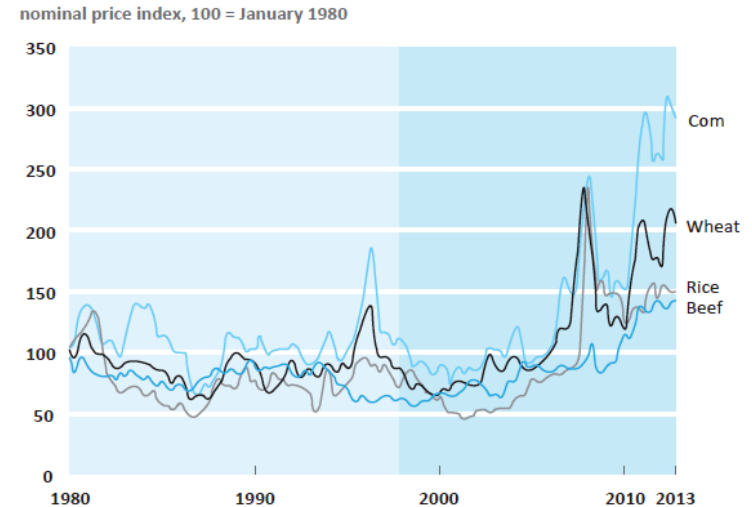
Constraints of Agribusiness Strategies



At a glance, the DRC has many context-specific constraints that hinder business development. To combat these obstacles, agribusinesses must erect contingency plans that take into account the realities of risky business within an unpredictable business climate.

• **Transportation / Storage Infrastructure:** Currently, the Congo National Railway Company (SNCC) (the linkage route from the DRC, to Zambia, Southern Africa, and Angola) currently sits non-operational. According to the World Factbook, 98 percent of the DRC's road network (2004) remains unpaved (CIA, 2004). Outdated trucking fleet still crisscross the Congolese terrain, being constantly subjected to constant breakdowns due to poor road conditions and corruption along the way (see World Bank 2010).

• **Cost of Inputs (seeds, fertilizers, pesticides):** All improved seeds, fertilizers, and pesticides used in Congo are imported. There is a lack of capital available to bolster the efforts taken at the National Institute for Agronomic Research (INERA) to provide inputs on a large scale. In turn, the DRC pays a premium for import costs, delivery delays, and transportation costs (see World Bank 2013).



• **Unpredictability of Climate Change and Crop Disease:** Water availability and rising temperatures increase environmental shocks and crises such as soil erosion, volcanic eruptions, and mudslides, leading to crop shortfalls. Crop disease is a persistent threat to agricultural production in largely agrarian communities, particularly Cassava Mosaic Disease (CMD) and Banana Xanthomonas Wilt (BXW) (see FEWS NET 2015).

• **Political Instability and Erratic Governmental Policies:** With President Kabila's refusal to cede power by end of 2016, the DRC sits at the intersection of structural change and social degeneration. Nobody knows what will happen next in such a volatile sociopolitical environment, so investors continue to avoid such a risky investment in the Congolese economy.

• **Global Food Prices:** Many variables contribute to the rise and fall of global food prices, ranging from annual weather patterns to changing consumer diets. In the past twenty years, the world has seen the volatility of the agricultural market (namely the World Food Price Crisis in 2007-2008), so investors beware the risk involved with commercialization of agricultural production.

Overcoming Constraints

Although this report focuses on the agribusiness strategies for implementation at the Kifita farm, a baseline understanding of current constraints and possible solutions is essential to agribusiness success in the DRC. The listed solutions are by no means quick fixes, but possible long-term approaches to sustainable development in the DRC.

Infrastructure Development

Addressing physical infrastructure development can unlock the untapped potential of the agricultural sector in the DRC. Moving forward, private companies and public authorities should drive regional connectivity, connecting urban to rural regions to promote market accessibility and economic development. Leveraging public-private partnerships, such as the Sino-African ‘infrastructure for minerals’ deal, can increase road connectivity to expand feasible market size for the Katanga province (see Kabemba 2016).

State Building

However, infrastructure development is futile without a functional state backing its construction. As Kabemba states, without a functional state, the infrastructure being built will again collapse in a matter of time. State building is necessary for infrastructure maintenance and operations over time, so the DRC should focus on stabilizing its economy and political system. The aforementioned Sino-African partnership isn’t a genuine win-win relationship, but rather a deal that allows China to exploit the DRC’s weaknesses, ignore the wellbeing and equal pay of Congolese people, and continue to support the kleptocratic rule that persists. Reform is needed on a national level, not only to stabilize democratic functions within the country, but also to ease trade regulations, market entry and foreign investment and ‘to move toward a rule-based and predictable policy environment’ (Kabemba, 2016).

Support Agricultural Input Suppliers

Today, Africa imports more than half of the rice it consumes, spending over \$3.5 billion a year (World Bank, 2013), and the DRC is no different. Because of high transaction costs associated with food production, it is usually cheaper to import foods than produce them. Public authorities need to invest in the agricultural sector and support suppliers, specifically those who produce inputs such as fertilizers, seeds, and pesticides. By subsidizing these efforts, the Congolese government can drastically cut government expenditures on food imports and local food prices.

Leverage Educational Institution Relationships

Lastly, the DRC needs to invest in education, research and development, and relationships with similar agriculture-related organizations in SSA and Latin America. Research institutions such as The International Institute of Tropical Agriculture (IITA), Africa Rice, The International Center for Tropical Agriculture (CIAT), Brazilian Agricultural Research Corporation (Embrapa), and Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) push research and development and regional agribusiness. Through these relationships, the country can establish contingency plans to climate change and crop disease, ensuring food for local consumption and transnational exports.

Through these efforts, the DRC can disable barriers to economic development and improve capacity and state building. One cannot foretell global food prices, so by diversifying crop production between staple and cash crops, the country doesn’t place as much risk in one agricultural commodity. By addressing these constraints, which by no means constitute a complete list of factors plaguing economic development in Congo, the DRC can provide a much better standard of living for its citizens and keep the talented and educated from securing positions and livelihoods elsewhere.



Literature Review

This literature review attempts to i) explore sources based on agribusiness strategy and ii) discuss successful cases of agricultural production implementation. In all, the review will explore lessons learned from concepts and projects, SWOT analysis of each strategy (strengths, weaknesses, opportunities, and threats), and the pros and cons to each.

Organic Agriculture and Livestock Production

Within an organic agriculture and livestock production model, smallholder farmers set up local practices to: 1) feed themselves and their families (subsistence-oriented), 2) grow enough to sell their goods and produce at local markets (market entrants), and 3) sell their goods and produce exclusively at the local markets (market-oriented) (de Janvry, 2009). Within a case study of Vietnamese rural farming households (1992/3 – 1997/8), market-oriented households benefited most from rapid agricultural growth by diversifying away from staple crops to high value cash crops (World Bank, 2009). Staple crops (rice, corn, cassava) were mainly produced for home consumption while cash crops (dragon fruit, mushrooms, maize) were conserved for market sales.

For example, Environmental Alert (EA) in collaboration with Kampala City Council and the financial support of CORDAID initiated a five-year Urban Food and Nutrition project to rectify the food security and malnutrition issue within the Makindye Division of Kampala, Uganda. The project strategy, which emphasized a two-year pilot stage and a three-year expansion phase, enabled local community members to grow sustainable agriculture for food security. Through agro-forestry, crop production (banana, vanilla, cassava, and mushrooms), livestock banking scheme, community trainings, and nutrition education, the Makindye Division enjoyed improved food security and nutrition, income generation, skills development, and environmental sustainability at the household level (Kaweesa, 2005).

In Somalia, the Somali AgriFood Fund (SAF) has helped drive economic development, job creation, and food security through traditional agriculture, aquaculture, and livestock production³. In 2013, the International Fund for Agricultural Development (IFAD) launched a project focused on enhancing food security in the Horn of African through diaspora investment in agriculture. One of its priorities was to create a seed capital matching investment fund intent on capturing diaspora investment into Somali agribusinesses. Small and medium-sized enterprises funded ranged from agriculture (Al Nur Mixed Farming) to aquaculture (Red Sea Fishing Company). Al Nur Mixed Farming (Jibgale Valley, Somalia) focuses on cash crop cultivation and small-scale dairy operation. Red Sea Fishing Company (Puntland, Somalia) focuses on large-scale fishing, processing, and delivery to local and export markets.

By January 2016, six business owners have been awarded financing for a total of \$435,600. The approved business plans involve eight diaspora investors, all originating from the region they invest in and are contributing 40 to 60 percent of investment (IFAD, 2016). Using this model, the fund has launched hundreds of full-time jobs, opened new market outlets for small-scale producers in the agriculture and fisheries sectors, and put applicants in contact with Somali banks to complete financing cycles.

“Staple crops (rice, corn, cassava) were mainly produced for home consumption while cash crops (dragon fruit, mushrooms, maize) were conserved for market sales.”

Strengths

Agricultural production boasts a massive potential to leverage agricultural land and natural resources to generate shared and sustained growth within Kifita region. Within this region, great potential lies in crop diversification, i.e. maize, beans, cassava, which open doors to other crop markets. In export markets, great potential lies in the global organic foods market, where many consumers are searching for healthy, non-genetically modified organism (non-GMO) products. According to the International Foundation for Organic Agriculture (IFOAM), the European organic foods market continues to rise (12.6% annual growth), with €27.1 billion organic retails sales in 2015. Similarly, American consumers spent more than \$43 billion on organic foods in 2015 (see OTA, 2016). However, organic foods production continues to be outpaced by the growing demand within the EU (see IFOAM, 2016) and USA. In addition to increasing KIFITA farm productivity and efficiency through improved agricultural practices, this strategy could help create an umbrella agricultural cooperative that acts as an engine for local economic development. With improved agricultural techniques, farmers could improve land productivity and increased overall yields. With increased food supply, farms would require increased labor productivity for farm operations, harvest, and transport to market. Some farmers would have a comparative advantage to producing certain crops over others, so an agricultural cooperative could help promote cooperation amongst smallholders to leverage sales at market.

“This strategy could help create an umbrella agricultural cooperative that acts an engine for local economic development.”

Weaknesses

However, at this point, limited data exists on population demographics, community needs, and nutrition problems. EA spent six months on the field prior to project implementation to acquire project-planning data through a baseline survey and situational analysis of food security issues in the region that the project was hosted. Agricultural experts facilitated modern farming techniques (bio-intensive gardening, mixed farming techniques, and nutrient cycling) and community trainings on agriculture, an organizational asset that is not available at this point. As global weather patterns continue to shift and land shortages increase, it becomes increasingly difficult to engage in organic food production, especially with the high costs of agricultural inputs such as physical capital and organic fertilizers, which are typically not produced in Congo and must be imported. From an export market perspective, the organic food market is becoming oversaturated with commercial suppliers who have transitioned into the market. According to Gro Intelligence, before entering foreign markets, farmers must obtain certification to market their products as organic. Different import markets have different certification requirements, so it makes it difficult for smallholder farmers to create a uniform production scheme that could affect many unique markets. Also, once a farmer has complied with the foreign standards, they must seek an agent certified by the import market to certify their product as organic, one that may or may not have a presence within their immediate vicinity. Altogether, the process proves to be costly and time consuming considering the initial application fees, annual renewal fees, assessment on annual production or sales, and inspection fees. The DRC may not have a comparative advantage on organic goods shipped from the DRC to western markets considering the costs to ship, package, and meet stringent multinational food standards.

Case Study Profile

Ray's Sheep and Goat Fattening Farm

Ray's Sheep and Goat Fattening Farm (Ray's Farm) is a small livestock operation situated in the Awdal region of Somaliland. Within this region, livestock production continues to be one of the driving forces of the economy. However, poor productivity, scarce animal feed, constant droughts and environmental degradation continually mar production. Noticing this gap within the market, Ray's Farm seized the opportunity to produce animal feed and fatten and breed livestock.

Backed by diaspora investments, Ray's Farm has been able to secure additional capital and upscale production. Beginning with 100 sheep and goat on three different farms, Ray's Farm has grown to acquire new farmlands, 700 heads of sheep and goat, and a new shaded area for cattle.

Location Awdal region, Somaliland

Legal Status Small-sized Enterprise

Management? Diaspora-backed Venture

Year Est. 2012

Target Market Local rural/urban livestock producers

Revenue Scheme Livestock production for Awdal region

Employees 51



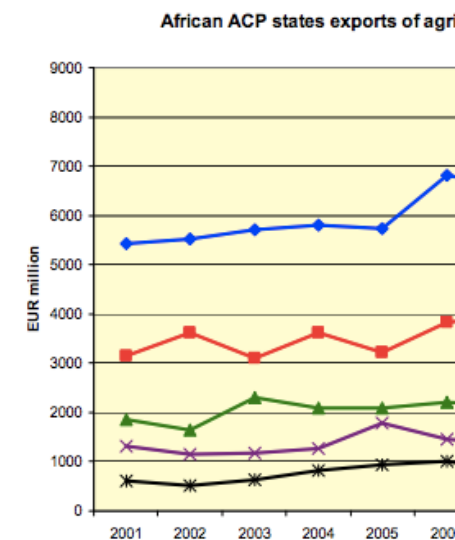
Opportunities

NORTH & SOUTH KIVU

According to a recent USAID assessment of value chains in the North/South Kivu regions and Katanga province, soy, beans, and potatoes emerged as viable opportunities in the Kivus while maize and beans were the highest performers in Katanga (O'Donnell, 2015). In the Kivus, beans can be stored for up to three months, but are the heavy focus of many NGO interventions and competing producers. With changing consumer preferences, potatoes grown in Kivu have become a staple food in the home, so the market offers a great opportunity for smallholder production and commercialization. Soy presents the most interesting opportunity for smallholder production. Recently, soy has increased in demands within local village markets, with flour processing providing increased value-addition. In addition, because soy must be processed, it is more conflict-resistant as rebel forces prefer to take immediately consumable items. In addition, there are opportunities to enter urban markets within Bukavu and Goma (soy) and the cross-border trading markets of Rwanda and Uganda (beans/potatoes) where demand continues to overtake supply.

KATANGA

In Katanga, maize can be stored for up to twelve months, so this high caloric food source continues to be heavily produced staple crop. Maize production quantities have slowed over the years, but are expected to increase. However, despite maize's market potential, the Katanga province normally imports the cheaper and higher value maize from Zambian production. Beans continue to be a high protein staple crop even within the southern part of the DRC, but soy goes by relatively unnoticed. In the Katanga province, soy hasn't become a standard part of the local diet, despite its high nutritional value. Small-scale and large-scale producers alike refuse to engage in the soy market because of low demand and thin margins. Future producers could add value to this cash crop in the form of food education or branding initiatives, forming a new market within the Katanga region.

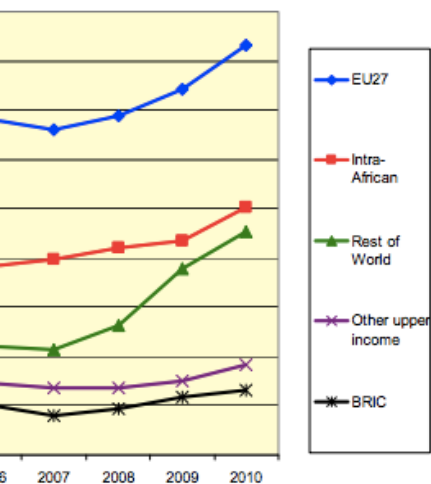


North & South Kivu -

Factor/Product	Soy	Beans	
End market competitiveness	High	High	
Inclusive growth	High	High	
Food security/nutrition	High	High	
Conflict-neutral and resilient	High	Medium	
Pro-women	High	High	
Pro-youth	Medium	Medium	
Climate change robust	High	Medium	
Benefit cost analysis	High	Medium	

Katanga - Oppor

Factor/Product	Horticulture	Farmed fish	Maize
End market competitiveness	Medium	High	Low/High
Inclusive growth	High	Low	High
Food security/nutrition	High	Low	High
Conflict-neutral and resilient	Low	High	High
Pro-women	High	Low	High
Pro-youth	Low	Low	Medium
Climate change robust	Medium	Medium	Medium
Benefit cost analysis	High	High	High



EXPORT MARKETS

In relation to export markets, the DRC has a huge opportunity to export to western markets in Europe or the United States, or to emerging economies in Brazil, China, India or Russia. According to COMTRADE data on African agricultural exports, high-volume trade to the EU and other world powers have dramatically increased since 2007. However, an even greater market opportunity lies in intra-African trade, where transactions costs are lower and organic certification processes aren't as strenuous.

Opportunity Matrix

Potato	Horticulture	Small livestock	Bananas
Medium	Medium	Low	Obstacle
High	High	Medium	High
High	High	Low	High
Medium	Medium	Obstacle	Low
High	High	High	Medium
High	High	Medium	Medium
Medium	Medium	Medium	Low
Medium	Medium	Low	Obstacle

Major opportunity Major obstacle

Opportunity Matrix

	Beans	Eggs	Soya beans	Beef cattle
	High	Medium	High	High
	High	Medium	Medium	Low
	High	Medium	Medium	Low
	High	High	High	Medium
	High	Medium	High	Low
	Medium	Low	Low	Low
	Medium	Medium	Medium	Medium
	Medium	Medium	Medium	Medium

Major opportunity Major obstacle

Threats

While local and regional market-oriented strategies shift existing smallholders farmers from food production for home consumption to market retail, subsistence-oriented strategies help fledging farmers to provide food for themselves and their families. Within the Makindye Division, agriculture was subsistence-oriented, increasing food security and purchasing power at the household level. According to the Uganda National Household Survey 2012/13, 46% of the household expenditure was on food, beverage, and tobacco. In comparison, the percentage of consumer expenditure on food, alcoholic beverages, and tobacco in the USA is 8.6% (USDA, 2016). Households that allocate a greater percentage of their income to food are more susceptible to shocks and stresses that come from volatile global food prices. While this strategy is a great contender for local-level poverty reduction, it is does not promote profit maximization for investors. Within the EA project, there was no need for large-scale efforts to transport food and livestock to market. An export market strategy would have to address the deteriorated and/or nonexistent road infrastructure in the DRC. With perishable crops or fresh meat that need to be kept at a certain temperature from harvest to consumer (cold chain), there is little to no room for elongated transport times to get goods to market.



Organic Fertilizer, Pesticide, or Animal Feed Production

The second agribusiness strategy revolves around agricultural input production, such as fertilizers, pesticides, or animal feed. Many African countries, the DRC included, fail to compete within global agricultural markets due to the high costs associated with importing agricultural inputs. Because of the costs associated with delivery delays at the border, import costs (tariffs), and transportation costs to producers (along poor road conditions), African countries elect to spend huge amounts of money towards food imports to quell national consumption. By producing agricultural inputs in the DRC, this agribusiness strategy can supply much-needed products to local, regional, and export markets.

In order to promote food security and produce its own food, the DRC has to invest heavily into national infrastructure, provide linkages to existing markets for smallholder farmers, and improve capacity building within the country, variables which will take many years and dollars to bring to fruition. Overall, the country has slipped into the ‘net food importer’ status – meaning that the value of imported foods is higher than the value of exported foods. To curb this food-import dependency, this strategy hones in on increasing productivity within the Katanga region, which still has a lot of room for improvement. For example, South Africa-based Talborne Organics saw the potential to produce organic fertilizers as natural alternatives to chemical additives in the early 1990s. Since, the company has grown to manufacture and distribute organic fertilizers, natural and organic weed control, and organic pesticides to other African, European and North American markets. Talborne’s target market includes organic farmers, wholesale and retail nurseries, landscapers, sports turf industry, and herb and essential oils producers. By focusing on larger, wealthier consumers, Talborne Organics has been able to establish itself as a go-to supplier for organic agricultural inputs in South Africa. The company has grown to employ forty team members and provide indirect jobs through sales and distribution services.

In Kenya, advertiser-turned-entrepreneur Marion Moon dedicated herself to improving food security and nutrition in Kenya through soil sustainability efforts. Her for-profit social enterprise, Wanda Organics, focuses on boosting the land productivity for smallholder farmers in Africa through two organically produced products: Plantmate (Organic Basal Fertilizer) and Prime EC (Foliar Plant Food). Backed by the United States Agency for International Development (USAID) Feed the Future Engine Program, she is building two village-level distribution centers to increase farmer accessibility to bio-organic fertilizers and teach farmers proper fertilizer application techniques. As Rakotoarisoa et al. describes, increasing fertilizer use and agriculture intensification on existing farmlands could lead to an increase in the levels of productivity and production. The DRC consumes only 290 grams of fertilizer per hectare of arable land, as compared to 51,680 grams consumed in South Africa’s established export economy (2001). Also, the DRC only boasts 3.6 tractors per 100 km² of arable land (2005), meaning that increased production and commercialization can occur with improved agricultural machinery. Similarly, increasing nutritious feed alternatives for livestock consumption can improve efficiencies with stock cultivation and harvest. Improved access to nutritious animal feed provides stronger, healthier livestock, providing higher quality products full of calories and proteins for the SSA region.

“Increasing fertilizer use and agriculture intensification on existing farmlands could lead to an increase in the levels of productivity and production.”

Strengths

While understanding of the science of animal nutrition continues to expand and develop, most of the world's livestock (particularly ruminants in pastoral and extensive mixed systems in many developing countries) suffer from permanent or seasonal nutritional stress (Bruinsma, 2003). These stresses promote poor nutrition within livestock and crops alike, leading to disease, low yields, or increased susceptibility to weather variability. Organic fertilizer can help freshen up Africa's ailing, rusty-red soils, but there is not enough land available to produce manure in sufficient quantities. One cow can produce about 15kg of nitrogen in manure annually, but a healthy maize crop needs up to 100kg of nitrogen a hectare⁴. With increased agricultural inputs, smallholder farmers and producers can augment production levels and eliminate the need for imported goods. Many inorganic fertilizer and animal feed producers use probiotics, enzymes, and acidifiers so that animals produce more meat while consuming the same amount of feed (Goedde, 2015). Providing organic agricultural inputs serves changing African consumer preferences, which demand healthier and environmentally sustainable food options. This strategy provides traceable and certified foods that are guaranteed to meet environmental and corporate social responsibility, in addition to fulfilling present and future demand.

Opportunities

This agribusiness strategy focuses on clean, organic fertilizers and animal feed products grown locally in the SSA region. With little to no competition within the DRC market, this strategy could prove economically advantageous for stakeholders, while providing smallholder farmers with organic agricultural inputs and proper application techniques. Developing countries' share of global use of cereals for animal feed nearly doubled (to 36%) from the early 1908s to the late 1990s (Delgado, 2005). As global population, urbanization, and income steadily increases, the need for more livestock products and consequently animal feed products grow as well (Steinfeld, 2006). Economic growth is expected to continue into the future, typically at rates ranging from between 1.0 and 3.1 percent (Van Vuuren, 2009).

Weaknesses

The Green Revolution (1940s to 1960s) provided certain seeds, fertilizers, and pesticides which were meant to increase land productivity and provide sustenance for a rising global population. Initially, many lands enjoyed an increase in food accessibility, but over time contaminated landscapes began to negatively impact the health of the people who depended on it. Excessive chemical use in the SSA region, particularly in the Katanga province, could decimate soil conditions and hinder future production efforts. Also, Kifita farm managers would need a deep understanding of specific crop needs, cultivation processes, and soil requirements to engage in this agribusiness strategy. Otherwise, misaligned efforts would not only destroy the environmental conditions in the area, but also diminish profits. A majority of Congolese smallholder farmers rely only on rainfall for crop cultivation, while the minority is loyal to specific fertilizer/feed brands. To capture this market, this strategy would have to add value to farmers, such as guaranteed access to certain markets using labels such as 'organic' or 'sustainably grown'. However, there is a huge importance placed on the proper application of fertilizers and feed. Improving animal feed availability means nothing if there is no oversight on the proper levels of distribution to fields and livestock.

Threats

Branding and acceptance by smallholder farmers is the greatest obstacle facing this strategy. If clean, organic fertilizers and animal feed products fail to be accepted by Congolese smallholders, it will be nearly impossible to scale up efforts for exportation. Many Congolese smallholders elect to use no fertilizers or minimal manure applications because of high costs. One of the biggest obstacles would be educating smallholder farmers to invest in their lands to reap the long-term benefits of sustainable land productivity as opposed to avoiding the short-term costs of fertilizers. Lastly, the potential for fertilizer policy reforms could liberalize import markets and increase competition within the market.

Case Study Profile

Talborne Organics

According to company history, Talborne Organics was organized around an opportunity to supply organic fertilizer to global markets. Based in South Africa, the company focuses on organic fertilizer and pest control production as an alternative to synthetic fertilizers, which have been the main causes of environmental pollution and degradation.

Talborne has grown to employ over forty team members while facilitating the indirect employment of local community members through sales and distribution services. Its' unique financial model caters not only to organic farmers, but to the sports turf industry, retail garden centers, landscapers, and essential oil producers.

Location Gauteng, South Africa

Legal Status Medium-sized Enterprise

Management? Family Owned

Year Est. 2000

Target Market South African farmers and nurseries

Revenue Scheme Fertilizers direct to consumers

Employees 40



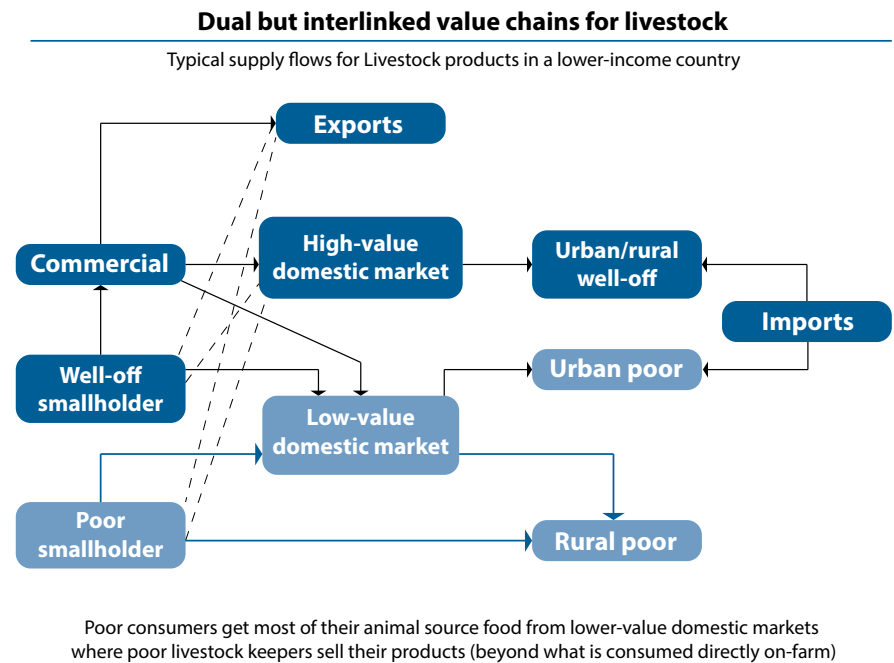


Supply Chain Improvement

The third agribusiness strategy revolves around supply chain improvement. Supply chain improvement refers to planning, information sharing, and value-adding activities, from raw material to final distribution [of a specific good or product] (Glatzel, 2014). In the case of agriculture – it is necessary to look at this specific strategy from two distinct vantage points – asset-based or need-based strategies. Asset-based strategies leverage off existing resources within a region to aggregate product through shared ownership. Need-based strategies address an absence of a particular link in the supply chain to deliver the product to the end customer. The food hub model marries asset-based and need-based strategies to enable efficient distribution channels from smallholder farmers to end consumers.

A regional food hub is a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand (Rogoff, 2014). The supply chain improvement model (food hub scenario) leverages off of existing smallholder farmers in order to aggregate production efforts, facilitate distribution to market, and form agreements with end operators. This scenario will focus more on i) investigating how many smallholder farmers in the Haut-Lomami region grow subsistence crops and how many are willing to take their efforts to market, ii) designing the operational infrastructure needed (technology, agreements, and knowledge base) and iii) designing and managing the physical infrastructure needed (distribution center, transportation fleet, physical equipment). The food hub model eliminates the need to produce agriculture or livestock, but creates a financially profitable method of distribution linking dispersed rural producers to concentrated urban markets. Simply put, the focus will be solely designing the logistical framework that will increase profit maximization for smallholder farmers and Kifita stakeholders.

For example, Eastern Carolina Organics (ECO) uses a for-profit model to identify technology as a barrier to integrating sales, orders and information on pick-up and deliveries. Launched in 2005 (USA), it provides service to smallholder farmers within a 300-mile radius (using 2 box trucks, leased truck, one semi-trailer and 26,000 sq. ft. warehouse), generating over \$3 million in annual sales. Overall, 80% of sales go to farmers and 20% retain by ECO. Barwaaqo Marketing and Catering Services (BMCS), a diaspora-backed agribusiness in Somalia, is a crop collection, storage, and marketing service for farmers in six villages in the Gabiley District of Somaliland. Through this agribusiness strategy, BMCS ensures that farmers can get their produce to market and receive fair market price, while BMCS receives a sustainable stream of revenue.



Strengths

Food hubs leverage off existing market linkages to connect otherwise unknown producers to new consumers in nearby markets. Small-scale smallholders in the remote Haut-Lomami region increase their monthly sales while local consumers enjoy locally grown, fresh produce at a fair price. In addition, there is value added, providing consumers more than simply food. Consumers can learn about where exactly their food comes from or the nutritional education on best foods to eat and why. Farmers could open new markets by providing products that add value to existing crops. For example, cassava is a staple crop in the DRC, but many consume cassava as a vegetable stew called “pondu”, which is the finely cut cassava mixed with a variety of other vegetables. By providing high-value crops and products to urban markets, food hubs can be widely popular within the Congolese market environment.

Opportunities

The food hub model relies on the development and management of an effective distribution network, consisting of operational and physical infrastructure. By leveraging new technology, public-private partnerships (PPPs), and physical capital, regional food hubs act as catalysts to promote the creation of visible and invisible forms of infrastructure⁵. The biggest opportunity for food hubs lies in the formulation of a data visualization platform focused on agricultural resources and road connectivity within Kifita – circumventing political channels, poor institutional connectivity and technical capacities. Technological innovation and data analytics increase information sharing throughout the region, which have huge implications on input cost reduction and land productivity. Kifita International could use supply chain experience to accelerate PPPs and regional networking and actualize profit maximization.

Weaknesses

For food hubs based in rural areas far removed from urban city markets, the logistics and transaction costs to get the product to the consumer eliminates potential income for smallholder farmers. To bridge the geographic divide between producers and consumers requires immense investments in technological and physical infrastructure. Considering a best-case scenario, the Kifita farm is a six-hour bus ride to Lubumbashi. Within a worst-case scenario considering inclement weather, militia tension, and car breakdown due to poor road conditions could extend transportation times dramatically. Many food hubs are established in urban, established markets such as in Europe or the United States. For rural, emerging markets in Africa, especially in the DRC, investments into physical infrastructure need to be actively addressed. For BMCS, they rely on the strength of the regional Barwaaqo Farmers’ Cooperative and existing road infrastructure.

Threats

As aforementioned, the regional food hub depends on physical infrastructure investment in the form of storage facilities, transport fleets and miles of road networking, which would dramatically increase project costs. In addition, this strategy depends on the strength of existing food producers and logistics groups. If no producers exist or are unwilling to engage in urban markets, the regional food hub model collapses. Lastly, branding new products and crops for local consumption can be extremely limiting. Consumers come to markets loyal to a specific producer who may be a family friend or long-term acquaintance. Shifting consumer loyalty to a new brand or to a newly introduced crop (such as soy) proves to be a hard obstacle to circumvent. Developing formal agreements with suppliers, buyers and carriers could prove problematic as well.

Case Study Profile

Barwaaqo Marketing and Catering Services (BMCS)

Barwaaqo Marketing and Catering Services (BMCS) was an initiative to assist farmers in six remote villages in the Gabiley District of Somaliland to access urban markets. BMCS ensures that the goods are delivered to market and farmers receive fair market price. BMCS also leverages power from the Barwaaqo Farmers' Cooperative, a conglomerate of farmers who work together to provide solutions to agricultural production within the Somaliland region.

BMCS needed to secure capital to increase its' cold storage capacity and buy a vehicle to transport goods to the market. Through a diaspora investment fund facilitated by Shuraako, BMCS was able to purchase a refrigerated truck and refrigerated crop storage facility. Now, the business can offer increased shelf life of goods and higher upfront payments to farmers, adding value to the farmers within the Gabiley District.

Location Gabiley District, Somaliland

Legal Status Small-sized Enterprise

Management? Diaspora-backed Venture

Year Est. 2010

Target Market Smallerholder farmers in Gabiley District

Revenue Scheme Goods' transport to market for farmers

Employees 14





The fourth and final agribusiness strategy revolves around agricultural research and development (R&D). Agricultural R&D seeks to increase land productivity through the use of improved agricultural practices, more efficient inputs, and complex product and process improvements. Through agricultural R&D, communities can enjoy lower food prices, increased and per capita consumption, and decline in the number of malnourished individuals. According to the International Food Policy Research Institute (IFPRI), R&D investment strategies to increase agricultural total factor productivity (TFP) can lower world prices of cereals and meat by as much as 17 and 15 percent, respectively, as well as increase area planted in crops by 2.4 percent and crop yields by 8.5 percent by 2030 (Perez, 2015).

Agricultural R&D focuses on i) the improved use of existing technologies and ii) the generation and adoption of new technologies (seeds, smart farming equipment, data capture and analysis) to meet national and global food demand. The Green Revolution increased land productivity, decreased production costs, and helped feed millions of people worldwide. However, smallholder farmers were affected by the rising costs of seed, fertilizers, and pesticides, which ultimately contaminated the land and the people who depended on it. New research institutions are needed to ensure that new technology sustains natural resources and rural farmers know the proper usage and techniques on how to administer these tools. For example, Brazilian Agricultural Research Corporation (Embrapa) is focused on the intentional transformation of Brazil's savannah landscape, the public company has developed a genuinely Brazilian model of tropical agriculture and livestock to overcome the barriers that limited the production of food, fiber, and fuel in [Brazil] (Embrapa, 2017). Since 1973, the organization has created and recommended technologies for Brazilian agriculture and employs over 9,000 people including over 2,000 researchers, three-fourths of whom have doctoral degrees.

“New research institutions are needed to ensure that new technology sustains natural resources and rural farmers know the proper usage and techniques on how to administer these tools.

Strengths

Agricultural R&D typically begins in large-scale farming enterprises that have the means to incorporate these new technologies and increase output. But, R&D produces knowledge and development processes that, when implemented, affect production for a long time. Over time, these process improvements are made available to smallholder farmers who want to produce for local and export markets. This phenomenon accelerates the economy, converting ag-based sectors to agro high-tech industries with a massive job market for technical, knowledge based positions. With the massive influx in context-specific seeds, fertilizers and pesticides, there is no need for high-priced import and transaction costs. These decreased costs of production lead to lower prices for food, allowing consumers to purchase more or freeing up their income to be spent elsewhere (Giving, 2014). With increased tools for technology-enabled farming (farm management software, predictive data analytics, and sensors), farmers and scientists alike can capture data concerning collective land parcels and find ways to boost efficiency within the agricultural sector.

Weaknesses

Buyers typically self-select into three basic buying groups, from visionaries, pragmatists, to conservatives (Moore, 2014). Along this spectrum, visionaries engage with new technology rather quickly, pragmatists wait and see what the group consensus is before purchasing, and conservatives normally engage after all the commotion has settled before purchase. Within the technology sector, there exists a “technology usage lag”, one that increases the time needed for the technology to reach critical mass within a community, region, or country. Aside from consumer preferences, the initial high costs associated with new technology prevent smallholder farmers or fledgling startups to incorporate them into their business models. In the agricultural sector, not only do farmers have to purchase high-priced seeds but must consistently use the prescribed fertilizers and pesticides, or else the seeds may not produce crops or fail to meet production estimates. Workshops and education sessions must also be implemented to instruct farmers and practitioners on the best practice techniques and processes needed to see the effects of technological implementation.

Opportunities

With global markets moving towards transnational interconnectedness, public authorities, private companies, and investors are placing mass investments into process refinement and technological innovation. According to Alston and others (2000), agricultural R&D investment, high returns are at least broadly possible, with an average 42 percent rate of return across 700 studies, well above opportunity cost of public investment. Through R&D, the DRC can begin to produce and analyze farm data that has largely gone undocumented to date. In SSA, data is extremely hard to obtain, so having location data, yield analytics, and year-to-year changes documented can push agricultural innovation even farther. Three top universities exist in the Democratic Republic of Congo, from the University of Lubumbashi, University of Kinshasa, and University of Kisangani. The agricultural R&D can connect these universities and create a platform for agro-tech innovation and agro-tech skill sharing. By providing a space that encourages scientific contribution and technology, Kifita could encourage top-ranked scientists and engineers to stay and practice in Congo instead of migrating to established companies abroad. The ‘brain retain’ strategy speaks to making significant investments in infrastructure and education to retain or to recover the human capital generated (Dodani, 2005). This research institution can act as a catalyst toward more opportunities and amenities, keeping top-ranked talent in the DRC.

Threats

With President Kabila refusing to cede power in late 2016, increases in political instability further dissuade foreign investors and private companies to make long-term relationships with the DRC. Rebel groups continue to roam within the Eastern part of the country and make connectivity between cities difficult for local community members. With little to no opportunities for upward mobility, those who can afford the plane ticket migrate to nearby African countries or the Global North, feeding into further brain drain – the concept that contributes to the flight of highly skilled human capital out of the country. For this agribusiness strategy to succeed, sociopolitical stability must exist at the national level.

Case Study Profile

Brazilian Agricultural Research Corporation (EMBRAPA)

Since its inception in 1973, EMBRAPA has been one of the premier agricultural research and development institutions in the world. Through the creation of new technologies, knowledge and solutions primarily towards agriculture and livestock, EMBRAPA has played a huge role in transforming the Brazilian environmental landscape. In addition, the institution has enticed researchers worldwide to practice within Brazil, with over 9,000 employees, and over 2,000 researchers.

In addition to increasing innovation and yield production in Brazil, EMBRAPA has transferred knowledge and technology to emerging markets throughout Latin America and Africa, in hopes of increasing global food production. With increased interagency coordination and transparency, technological advances can help solve food security gaps in Africa.

Location Brasilia, Brazil

Legal Status Large-scale research institution

Management? State-owned

Year Est. 1973

Target Market Brazilian states and sovereign powers

Revenue Scheme Transfer of agricultural technology

Employees 9,790



Analysis

Analysis of Proposed Agribusiness Strategies

The data gathered from the feasibility study (first screen analysis and strategy ranking chart) uncovered many issues and prospects. A First Screen Analysis approach was chosen to test each agribusiness strategy on service feasibility, industry feasibility, target market feasibility, organizational feasibility, and financial feasibility. The criteria used ranged from i) Strength of Business Idea, ii) Industry-Related Issues, iii) Target Market Issues, iv) Founder-Related Issues, and v) Financial Issues (see Appendix for a detailed description of criteria). Based on each strategy's potential within each sub-section (high potential, moderate potential, or low potential), a cumulative score was assigned to each strategy. Thereafter, a strategy ranking chart ranked the agribusiness strategies from best to worst by numerical score that equates to high potential (score of 8.33 to 25), moderate potential (score of -8.33 to 8.33), or low potential (score of -25 to -8.33) for each part.

Organic Agriculture and Livestock Production

Within each sub-section, the agriculture and livestock production strategy scored far worse than other agribusiness strategies, namely because of target market and financial issues. It is extremely difficult to make customers aware of new products or services and to create “barriers to entry” for potential competitors. Also, this strategy requires a lot of initial capital and personal investment in market conditions where similar businesses are struggling to stay afloat. In order to make this poorly ranked strategy more viable, Kifita stakeholders must investigate ways to lower transaction costs while establishing a firm consumer market within the Katanga region. Overall, this strategy has low to moderate potential to maximize profit for internal and external stakeholders within the Katanga province but moderate to high potential to actualize regional food security.

RANKING OF AGRIBUSINESSES STRATEGIES							
Strategy	Strength of Business Idea	Industry-Related Issues	Target Market Issues	Founder Related Issues	Financial Issues	Expansion Capability	Score
<i>weighting</i>	<i>0.15</i>	<i>0.2</i>	<i>0.2</i>	<i>0.15</i>	<i>0.25</i>	<i>0.05</i>	<i>1</i>
Agriculture and Livestock Production	1	0	-2	0	-3	2	-0.9
Fertilizer, Pesticide and Animal Feed Production	1	2	2	0	-2	3	0.6
Supply Chain Improvement	5	3	4	5	0	4	3.1
Agricultural Research and Development	0	0	3	-1	-4	1	-0.5

*Each part has five items. Scores will range from -5 to +5 for each part.

*Rubric for ranking system can be found in Appendix



Organic Fertilizer, Pesticide, or Animal Feed Production

Interestingly, the fertilizer and animal feed production strategy (organic agricultural input strategy) scored highly in most sub-sections, but scored poorly within organizational and financial feasibility. Organizationally, stakeholders have limited experience or business connections in the fertilizer industry. Financially, outside of direct-to-consumer or direct-to-business financial model, there are a limited number of revenue drivers that could stem from this strategy. To make this strategy more viable, Kifita stakeholders should explore locations for a distribution center halfway between Kifita and Lubumbashi to cut transport times and store surplus foods. Overall, this approach requires a successful flagship product (i.e. plant food product) before adding complementary products or services, contributing to its' moderate potential for profit maximization and food security.

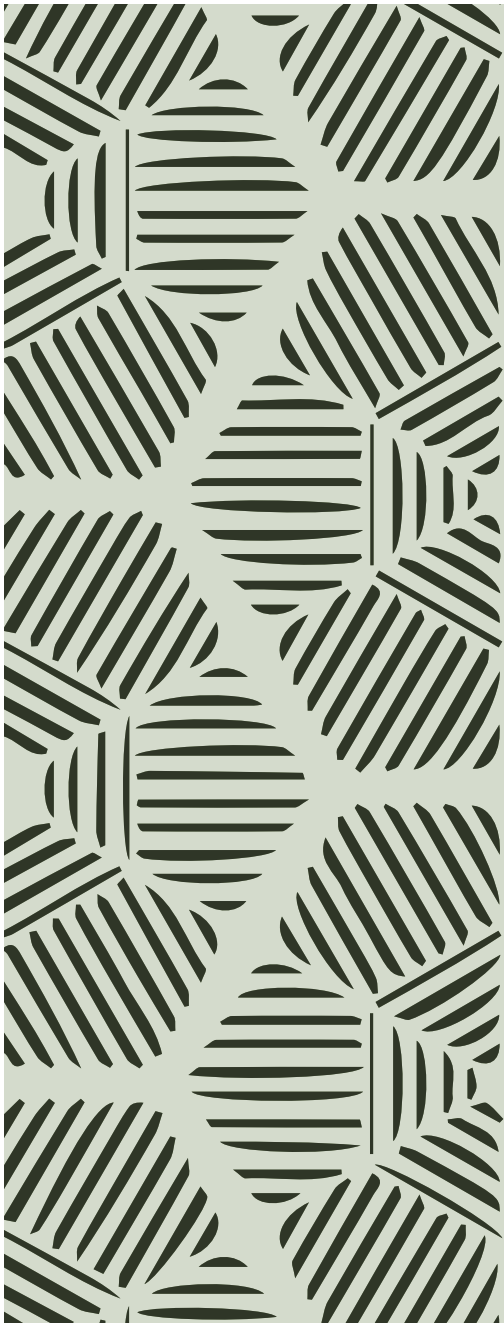
Supply Chain Improvement: Regional Food Hub

Supply chain improvement scored the highest as compared to other agribusiness strategies. The power lies in leveraging off existing resources instead of addressing an absence of a particular link in the supply chain to deliver the product to the end customer. Through this approach, stakeholders expend less initial capital, add value to existing smallholder farmers, and increase food accessibility within rural and urban sectors. Overall, this strategy has high potential to maximize profit and actualize food security through increased network aggregation and supply chain efficiencies.

Agricultural Research and Development (R&D)

The research and development strategy scored moderately because of poor scores within financial feasibility. Unlike the other strategies, R&D requires extremely high initial capital investment and is nearly impossible to execute without partnerships with similar research and technology groups, educational institutions, or national government. Also, because of a high technology usage lag time, it would take many years to see a return on investment or possible impacts on regional food security. To make this strategy more viable, Kifita stakeholders should partner with similar groups to offset financial risks involved, investigate technology and knowledge transfers from established R&D centers, and design a number of revenue drivers outside of research so that the organization breaks even during the technology usage lag time. Overall, this strategy has a low potential to maximize profit and food security in the short-term but a high potential to maximize profit and food security in the long run.

- 1 Regional Food Hub**
- 2 Organic Agricultural Input Production**
- 3 Agricultural Research and Development**
- 4 Organic Agriculture and Livestock Production**



Key Lessons from Case Study Analysis

Focus on one niche market

In order to be successful long-term, it is imperative to focus on the needs and desires of one consumer market and develop an agribusiness strategy around them. Once established, Kifita stakeholders can diversify interests and explore additional revenue schemes. All of the small agribusinesses selected focus on one consumer market and pour all of their energies into filling that market. For those that have grown to a medium sized enterprise, they still focus on their initial consumer market, but slowly seep into new markets with new products and services.

Organic is key

Organic agribusinesses have a massive potential to leverage agricultural land and natural resources to generate shared and sustained growth within Kifita region. Because it accounts for long-term soil health, it creates a sustainable and durable supply of food for the DRC. However, as global demand for healthy food options increases, this is the time to invest in sustainable efforts to export organically grown produce.

Role of diasporic groups in African development

Within many of the agribusinesses selected, the diaspora had a huge role to play within business development and socioeconomic growth back home. A number of these businesses leveraged partnerships with diasporic investment funds, development agencies, or entrepreneurial incubators to secure seed funding, grants, or low-interest loans. Remittances have taken a new form, one that utilizes the power of African entrepreneurship to spark transformative change. By leading the diasporic development movement in the DRC, Kifita stakeholders can shift the food security conversation in the DRC to one of self-reliance and self-actualization, where the country is able to produce enough food for itself and increase shared prosperity.

Selected Case Study Findings

	Ray's Farm	Red Sea Fishing Co.	Talborne Organics	Barwaaqo Marketing and Catering Services (BMCS)	EMBRAPA	CAFCO
Location	Awdal region, Somaliland	Bosaso, Puntland	Gauteng, South Africa	Gabiley District, Somaliland	Brasilia, Brazil	Puntland, Somalia
Legal Status	Small-sized Enterprise	Medium-sized Enterprise	Small-sized Enterprise	Small-sized Enterprise	Large-scale research institution	Medium-sized Enterprise
Management?	Diaspora-backed Venture	Diaspora-backed Venture	Traditional Management	Diaspora-backed Venture	State-Owned	Diaspora-backed Venture
Year Est.	2012	2006	2000	2010	1973	1988
Target Market	Local rural/urban livestock producers (fattening and breeding livestock) and export consumers in Saudi Arabia	Focusing on local and export markets, from various food industry establishments in Puntland and Somaliland, to export markets in Yemem, the United Arab Emirates, and Oman	Organic Farmers, Wholesale and Retail Nurseries, Landscapers, Sports Rurf Industry, and Herb and Essential Oils Producers	Smallholder farmers within (6) specific villages in the Gabiley District	Brazilian farmers, companies and agricultural industry, in addition to countless countries and institutions, international organizations, and joint research activities	Domestic and foreign fish markets and fishermen within the Puntland region
Revenue Scheme	Portion of revenue stems from fattening livestock, producing animal feed, and breeding livestock.	Fresh fish delivered direct to consumers	Organic fertilizers and pest control direct to retail businesses, farmers and practitioners, and large-scale facilities	Aggregate all goods and crops from the Gabiley District and transport to urban markets	Because EMBRAPA is a state-owned entity funded primarily through government initiatives and grant funding, this organization leverages multinational partnerships, knowledge creation and transfers, and ag-tech products as sources of revenue.	Selling fresh fish, selling fuel for fishing boats, repairing and servicing outboard engines, and refilling oxygen tanks for lobster divers
Differentiators	Focuses on bolstering the missing link in the Somali livestock production value chain, which has been scarce animal feed and poor productivity, aggravated by reoccurring droughts and environmental degradation	Through financing efforts, Red Sea has procured equipment to upgrade and expalin its cold chain system, keeping fish supply fresh during transport to local and export markets.	In addition to organic-certified products, Talborne designed its' VITA Organic Fertilizer, which has been lauded as an incomparable "All-in-One" fertilizer for crop performance, quality, and health.	Incorporated a refrigerated truck and regierated crop storage facility, in addition to offering smallholder farmers an alternative market linkage that offers higher upfront payments	Launched in 1973, EMBRAPA has profited from state funding and huge capital investments for over forty years. Today, it is composed of 46 research centers in addition to its headquarter base in Brasilia, allowing it to expand its' reach worldwide.	In addition to supplying a large portion of fish for domestic and foreign markets, CAFCO provides a value-added services for local fishermen to keep boats and fishing accessories in top condition.
Employees	51	82	40	14	9,790	74

Recommendations

Based on the literature review and feasibility study, this study ranks the following agribusinesses based on potential to inform local community development while providing a return on investment for internal and external stakeholders. The ranked list is as follows: 1) supply chain improvement, 2) fertilizer, pesticide, and animal feed production, 3) agricultural research and development, and 4) agriculture and livestock production. Food security issues need to be solved in the DRC, but it is more of an issue of increasing accessibility to foods than producing foods. Infrastructure, logistics, and network aggregation can help offset food security issues within the Katanga region.

Preferred Strategy Mix

In order to maximize business efforts for long-term success, Kifita stakeholders should combine elements of various strategies to actualize community development efforts. First, stakeholders should lease a reliable trucking fleet and transport existing land users' produce to market. Leasing trucking fleet cuts overhead costs and increases operating margins so that investors and stakeholders can expect expedited returns on investment. With initial profits, Kifita stakeholders should reinvest earnings into the business, transitioning into crop and livestock production once distribution channels and logistics have been established. At this point, the focus should be on fulfilling the food demand within the Katanga region for several years, scaling up production over time. Once the Kifita farm project is financially stable and food demand within the DRC has been addressed to the highest level possible, Kifita stakeholders should transition into producing organic foods and agricultural inputs for export markets in America or Europe.

Moving Forward

Robert Herjavec, one of North America's most recognizable business leaders, stated that one should "never build a [business] strategy on the stupidity of your competitors, if there is a market and you prove the market, they are going to do it". This study recommends that Kifita stakeholders do deep research during the August 2017 site visit to the Kifita Farm. Some topics you might address include:

- Are there more deep-seated reasons that prevent major companies from establishing themselves in the DRC?
- What other barriers to entry have not been explored through this preliminary study?
- What are all the community assets and resources (human capital, specific partners, businesses/NGOs, physical infrastructure, and community services) within the Katanga province?
- Who is a reliable, full-time agronomist that can be added to the team?
- Are there any abandoned state farms closer to Lubumbashi?
- Are there any viable locations between Lubumbashi and Kifita that could act as a distribution point for the Kifita Farm?

Data Acquisition

Also, stakeholders should be meticulous in acquiring farm yield data from this point on. Exact knowledge is needed on exact farm acreage, soil conditions, fertilizer use to date, crop and livestock yields to date, etc. These data metrics will serve future forecasting efforts and provide a strong foundation for financing conversations.

Conclusion

The regional and national food demand within the DRC grows every single day, so more concerted efforts for food production need to be made. The Kifita Farm project has an incredible opportunity to not only provide healthy food options to those in need but promote more efficient approaches to product delivery. The goal is to provide consumers with more than simply food, but add value through the use of sustainably grown, locally produced crops and services that boosts purchasing power at the household level. Although the DRC has been labeled a low-income food deficit country for many decades, this could be an inflection point where the country can begin to provide for its' own people and reject

global imports. Political, social, and economic stressors continue to disrupt food security and market stability, but innovating on past-applied projects done worldwide could help to solve food issues back home. Through an extensive literature review, case study analysis, and feasibility analysis of proposed agribusiness strategies, the Kifita Farm stakeholders now have a shared understanding of best practice strategies, market trends, and the most socially beneficial approach to community development and agricultural production. Moving forward, Kifita stakeholders can use the knowledge presented to design a defensible, proprietary agribusiness strategy and increase livability and shared prosperity within the Katanga province of the DRC.

Notes

¹ See World Bank. Democratic Republic of Congo: Country at a Glance. 2015. Available at: <http://www.worldbank.org/en/country/drc>

² The first sub-category, individuals earning \$2-4 per day, represents a “floating class” that is still vulnerable to slipping back into poverty (using \$2 per person per day as the world poverty line). The second sub-category is the “lower-middle class”, or those earning \$4-\$10 per day, who can save and spend on non-consumable goods. The third and final sub-category, those earning \$10-20, represents the “upper-middle class”.

³ More information available at <http://somaligrifood.org/>

⁴ Ken Giller is a Professor Plant Production Systems within WaCASA (the Wageningen Centre for Agroecology and Systems Analysis at Wageningen University. Quote obtained from a Guardian article, Costly fertilizer holds back a green revolution in Africa (see Gilbert, 2014).

⁵ According to the Public Private Infrastructure Advisory Facility, 70% of infrastructure PPP contracts are greenfield investments with an estimated value of \$143.3 billion (see www.ppi.worldbank.org/). A PPP is defined as a long-term contractual arrangement between a public entity or authority and a private entity for providing a public asset or service while a “greenfield” PPP infrastructure project is one in which the private partner designs and constructs a brand new infrastructure asset, and may operate it, depending on the specifics of the PPP arrangement (see Department of the Treasury).

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- Table 16: Fertilizer Consumption (100 Grammes Per Hectare of Arable Land)
- Table 18: Agricultural Machinery (Tractors per 100 KM2 of Arable Land)

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Appendix

In order to complete the First Screen Analysis, this study used the methodology summarized within Entrepreneurship: Successfully Launching New Ventures (4th Edition) by Bruce R. Barringer and R. Duane Ireland. As described within the textbook, First Screen is a template for completing a feasibility analysis. Its' purpose is to act as an initial pass at determining the feasibility or appropriateness of a business idea or strategy. In regards to this project, it was imperative to assess each agribusiness strategy from the lens of a planner advocating for increased livability but also from an entrepreneur's lens exploring highest rate of return for all internal and external stakeholders.

The process was relatively straightforward. Using the matrix provided by the First Screen Analysis, this study gauged four areas of feasibility analysis to quantitatively prioritize certain agribusiness strategies over others. Although it doesn't offer conclusive evidence for the merit of one strategy over another, it provides another layer of analysis that aided in recommendations and final strategy mix.

APPENDIX 3.1 FIRST SCREEN

Part 1: Strength of Business Idea

For each item, circle the most appropriate answer and make note of the (-1), (0), or (+1) score.

	Low Potential (-1)	Moderate Potential (0)	High Potential (+1)
1. Extent to which the idea: <ul style="list-style-type: none">• Takes advantage of an environmental trend• Solves a problem• Addresses an unfilled gap in the marketplace	Weak	Moderate	Strong
2. Timeliness of entry to market	Not timely	Moderately timely	Very timely
3. Extent to which the idea "adds value" for its buyer or end user	Low	Medium	High
4. Extent to which the customer is satisfied by competing products that are already available	Very satisfied	Moderately satisfied	Not very satisfied or ambivalent
5. Degree to which the idea requires customers to change their basic practices or behaviors	Substantial changes required	Moderate changes required	Small to no changes required

Part 2: Industry-Related Issues

	Low Potential (-1)	Moderate Potential (0)	High Potential (+1)
1. Number of competitors	Many	Few	None
2. Stage of industry life cycle	Maturity phase or decline phase	Growth phase	Emergence phase
3. Growth rate of industry	Little or no growth	Moderate growth	Strong growth
4. Importance of industry's products and/or services to customers	"Ambivalent"	"Would like to have"	"Must have"
5. Industry operating margins	Low	Moderate	High

Part 3: Target Market and Customer-Related Issues

	Low Potential (-1)	Moderate Potential (0)	High Potential (+1)
1. Identification of target market for the proposed new venture	Difficult to identify	May be able to identify	Identified
2. Ability to create "barriers to entry" for potential competitors	Unable to create	May or may not be able to create	Can create
3. Purchasing power of customers	Low	Moderate	High
4. Ease of making customers aware of the new product or service	Low	Moderate	High
5. Growth potential of target market	Low	Moderate	High

Part 4: Founder- (or Founders-) Related Issues

	Low Potential (-1)	Moderate Potential (0)	High Potential (+1)
1. Founder's or founders' experience in the industry	No experience	Moderate experience	Experienced
2. Founder's or founders' skills as they relate to the proposed new venture's product or service	No skills	Moderate skills	Skilled
3. Extent of the founder's or founders' professional and social networks in the relevant industry	None	Moderate	Extensive
4. Extent to which the proposed new venture meets the founder's or founders' personal goals and aspirations	Weak	Moderate	Strong
5. Likelihood that a team can be put together to launch and grow the new venture	Unlikely	Moderately likely	Very likely

Part 5: Financial Issues

	Low Potential (-1)	Moderate Potential (0)	High Potential (+1)
1. Initial capital investment	High	Moderate	Low
2. Number of revenue drivers (ways in which the company makes money)	One	Two to three	More than three
3. Time to break even	More than two years	One to two years	Less than one year
4. Financial performance of similar businesses	Weak	Modest	Strong
5. Ability to fund initial product (or service) development and/or initial start-up expenses from personal funds or via bootstrapping	Low	Moderate	High

Overall Potential

Each part has five items. Scores will range from -5 to +5 for each part. The score is a guide—there is no established rule of thumb for the numerical score that equates to high potential, moderate potential, or low potential for each part. The ranking is a judgment call.

Score (-5 to +1)	Overall Potential of the Business Idea Based on Each Part	Suggestions for Improving the Potential
Part 1: Strength of Business Idea	High potential Moderate potential Low potential	
Part 2: Industry-Related Issues	High potential Moderate potential Low potential	
Part 3: Target Market and Customer- Related Issues	High potential Moderate potential Low potential	

(continued)

Score (-5 to +1)	Overall Potential of the Business Idea Based on Each Part	Suggestions for Improving the Potential
Part 4: Founder- (or Founders-) Related Issues	High potential Moderate potential Low potential	
Part 5: Financial Issues	High potential Moderate potential Low potential	
Overall Assessment	High potential Moderate potential Low potential	

