



Ministry of Foreign Affairs

Addressing the \$200 billion demand for finance for Agriculture and Agribusiness in Nigeria

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Addressing the \$200 billion demand for finance for Agriculture and Agribusiness in Nigeria

April 2022

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AGRI LOGIC

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*Inspiring action
to improve
access to finance
by understanding
supply and
demand, gaps
and solutions.*

Introduction

Financing agribusiness is perceived as difficult, high risk, and insufficient by many. This study aims to provide an objective and comprehensive overview of supply and demand for agricultural finance, current gaps, and potential solutions that have been identified in Nigeria, Africa and the rest of the world.

The research was commissioned by the Embassy of the Netherlands to Nigeria and conducted by Agri-Logic. The recommendations in this report are made by the author, and do not necessarily reflect the opinion of the Embassy of the Netherlands.

Agricultural development and agribusiness is a priority for development cooperation between Netherlands and Nigeria. The Netherlands supports several development programmes in Nigeria aimed at horticulture, dairy and spices, activities include access to inputs, farmer training and capacity building, market access and new production technologies. Access to finance is a component that is flagged as critical in several current and upcoming partnerships by the Embassy as well as other local and international sector stakeholders. Professionalizing agribusiness often depends on access to finance. This could be finance for inputs to increase productivity, working capital to grow volumes, or assets to increase value addition.

The aim of the report is to explicitly inspire stakeholders to action in improving access to finance. A thorough understanding of current agricultural access to finance in Nigeria can inform recommended interventions for government and development programs, and opportunities for entrepreneurs as well as providers of financing.

The report distinguishes real risk from perceived risk, while highlighting gaps in supply and demand, and illustrating solutions and best practices. The report aims to understand the status of access to agricultural finance across sectors, the value chain, and states in Nigeria, with a focus on those most relevant to the objectives and most relevant to bilateral relations between the Netherlands and Nigeria.

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Agri-Logic

April 2022

Key Characteristics and Trends

Nigeria has the largest population in Africa and GDP size and growth alternate between the first or second position together with South Africa. Nigeria's GDP declined by -1.8% in 2020, compared to -2.2% across Sub-Saharan Africa and -3.4% global decline. World Bank estimates and forecasts GDP growth for 2021-2023 between +2.4% to +2.8%. (World Bank, 2022)

Indicator, values for 2020	Nigeria	Netherlands	South Africa	India
Land				
Land area (sq km)	910,770	33,670	1,213,090	2,973,190
Agricultural land (sq km)	691,235	18,220	963,410	1,796,740
Agricultural land (%)	76%	54%	79%	60%
Population				
Population	206 million	17 million	59 million	1.4 billion
Employment in agriculture (#)	72 million	350,000	3 million	593 million
Employment in agriculture (%)	35%	2%	5%	43%
Economy				
GDP (\$)	432 billion	914 billion	335 billion	2.7 trillion
GDP per capita (\$)	\$2,097	\$52,397	\$5,656	\$1,928
GDP growth (%)	-1.8%	-3.8%	-6.4%	-7.3%
Agricultural economy				
GDP agriculture, forestry, fishing (\$)	104 billion	14 billion	8 billion	487 billion
GDP agriculture, forestry, fishing (%)	24%	2%	3%	18%
GDP agriculture, forestry, fishing per capita (\$)	\$506	\$829	\$143	\$353
Agricultural efficiency				
Cereal yield (kg/ha)	1,509	8,318	4,934	3,248
Agricultural value per worker (\$)	\$1,447	\$41,454	\$2,859	\$821
Arable land (ha/person)	0.17 ha	0.06 ha	0.21 ha	0.12 ha
Inputs and services				
Fertilizer consumption (kg/ha)	20	266	73	175
Domestic credit to private sector (% GDP)	12%	101%	108%	55%
Logistics performance index (max=5)	2.53	4.02	3.38	3.18

Figure 1: Key socio-economic indicators Nigeria (source: World Bank)

Agriculture and agribusiness are widely recognized as being critical for development. The sector in Nigeria is characterized by:

- Production of *Crops, Livestock and Aquaculture*, with tubers, cereals and livestock being staples for domestic processing and consumption; and cash crops including cocoa, cashew, sesame and ginger for export value. Vegetables and fruits are a significant share of production, and are challenged by their perishability.
- *Smallholder Farming* with many subsistence farmers and often low productivity. Commercial farmers are less than half of the farmer population. Segmentation of these farmers is critical, depending on education, age, geography and productivity, farmers have different needs.
- A largely *Informal Economy and Entrepreneurship*: SMEs are significantly contributing to GDP, yet often not registered and with limited scalability beyond the founder's span

Key Characteristics and Trends

of control. SMEs are often community buyers or agrodealers, local processors or traders.

- *Policy and Legislation* is often focused on incentivizing domestic production and self-sufficiency, often by trade regulation for import or limiting access to foreign currency. WTO is critical of such trade barriers. AfCFTA may affect Nigeria's trade dynamic positively or negatively depending on many factors.
- With a growing population, challenges in infrastructure, and trade barriers, the country has high and increasing *Food Prices and Self-Sufficiency* is not yet in sight. This represents a need an opportunity to invest in agriculture and agribusiness, both for food self-sufficiency and as a contribution to GDP growth.

Political context

- Government focus on reducing import dependency and self-sufficiency.
- Trade and import restrictions are commonly used as an instrument.
- Access to foreign currency is used as a means to reduce imports.
- CBN incentivizes banks through target loan-to-deposit ratio and intervention funds.

Economic context

- Oil-dependent economy. Limited value addition through processing.
- High unemployment rates.
- Economy has been heavily hit by consequences of COVID19, yet beyond global downturn.
- Heavy inflation and naira devaluation. Gap between official and parallel fx rate.

Social context

- Mostly smallholder farming. Poverty is common in rural areas. Large inequality.
- Paradox of unemployment and labour scarcity.
- Trust is a major challenge in society and business.
- Informal networks and long term relations exist.

Technology context

- Agribusiness is currently a low technology sector.
- Communications infrastructure is improving quickly in reach and reliability.
- Bank settlements are efficient and instant.
- Data is not commonly accessible or used for decision making.

Environmental context

- Large portion of arable land, not always accessible through roads.
- All land belongs to the government, who can allocate. Land titles are often not documented.
- Land degradation and deforestation by smallholder agriculture is common.
- Climate change causes extreme weather and affects agriculture and food.

Legal context

- Financial sector is regulated by Central Bank of Nigeria.
- Business is regulated by the Corporate Affairs Commission.
- Import of specified products and commodities is restricted or regulated.
- Corruption is widely perceived with a large set of unwritten rules for business.

Figure 2: Summary of PESTEL analysis (source: Agri-Logic)

Key Characteristics and Trends

Crops, Livestock and Aquaculture

Nigeria produces roughly 200 million metric tonnes of produce with a total value of ₦32 trillion (\$83 billion). Tubers, legumes and cereals represent three quarters of total volume and 38% of total value. Higher value crops include vegetables and fruit, oil palm, cash crops like cocoa, ginger and cashew. Livestock and aquaculture represent 2% of production volume and 11% of value. (Figure 3)

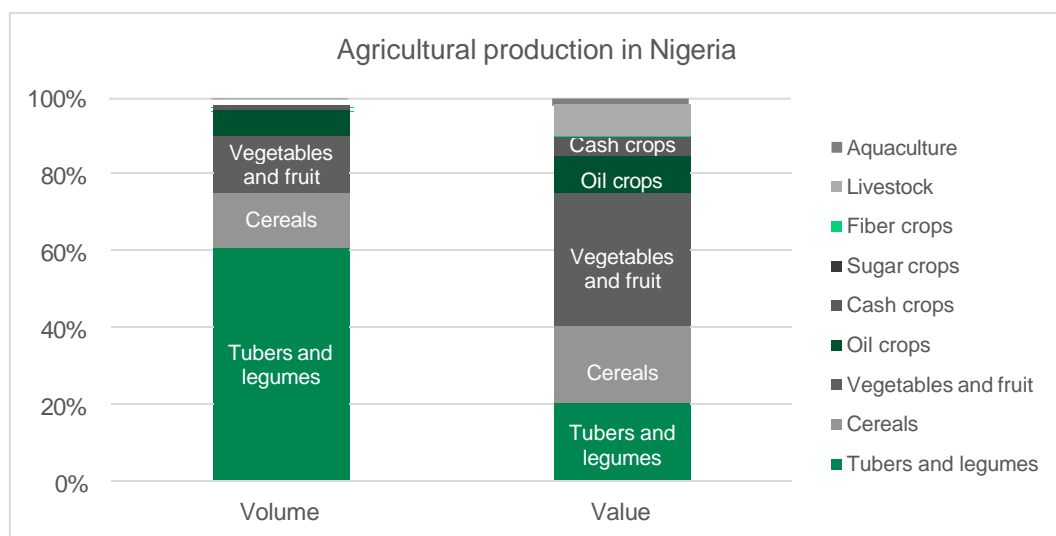


Figure 3: Agricultural production in Nigeria (sources: FAO, World Bank, Agri-Logic)

Yams, vegetables and fruits are generally marketed to consumers through a network of community buyers, traders and markets. Cash crops include cocoa, ginger, cashew and sesame. Nigeria is an exporter of these commodities into a global market, and exporters work through a network of buying agents to aggregate the crop.

Cassava, cereals and oil crops are commonly processed in country. Cassava processing is often small scale community processing into garri, whereas some medium or large processors work with outgrower schemes to secure supply for processing cassava flour and starch (Gro Intelligence, 2015). 80% of oil palm is produced by smallholders and processed in basic palm oil factories in communities, the remaining 20% is produced on large plantations and processed in processing facilities connected to the plantations (PWC, 2019). Maize is processed mainly into feed in medium-sized mills, whereas rice and other grains are milled at medium to large factories in strategic locations.

Poultry and aquaculture are often SMEs, producing live animals combined with processing. There are 17,000 poultry farms in Nigeria (NABC, 2020).

Key Characteristics and Trends

Production systems for cattle and goats are often small scale and nomadic. There is limited processing of dairy and most animals are used for meat, traded through local markets. Following an incentive for dairy producers to source locally, several dairy companies have set up grazing reserves and collection points to source milk from smallholders.

Smallholder Farming

About 70% of Nigerian households are active in agriculture (NBS, 2019). These is a population of 140 million Nigerians that are directly or indirectly involved with agriculture.

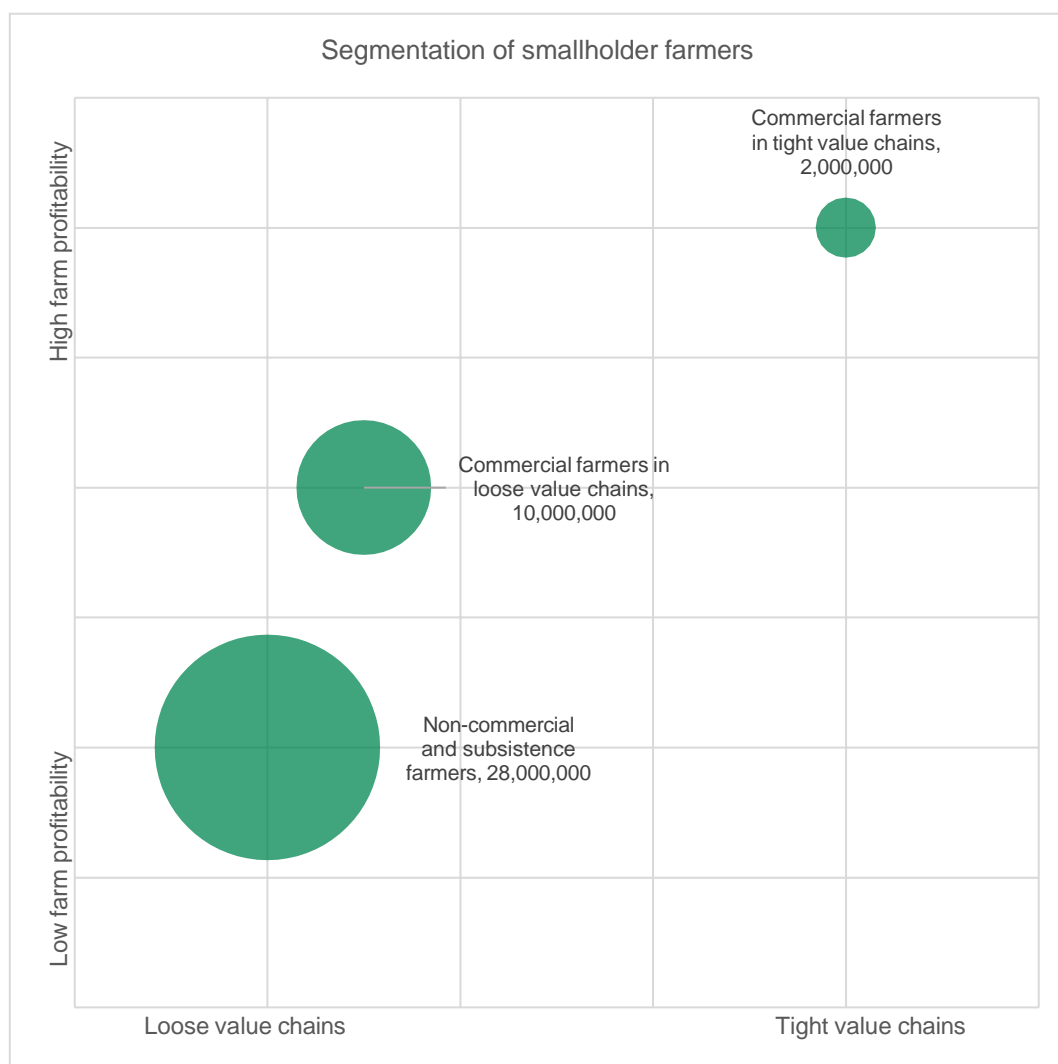


Figure 4: Segmentation of smallholder farmers in Nigeria (sources: CGAP, Agri-Logic)

80% of farmers in Nigeria are considered smallholders based on Nigeria's official definition because they own less than 5 hectares of land. 43% of smallholder households own <1ha

Key Characteristics and Trends

of land. 90% of smallholders intend to keep working in agriculture. Smallholder households are found throughout Nigeria. Households are largely headed by men (88%) and women play a limited role in decision-making. Access to education among the heads of the smallholder households varies, and almost half did not attend school or only had some informal schooling. 65% of smallholders has been farming for more than ten years. (CGAP, 2017)

Nigeria has 34 million ha of arable land (World Bank, 2022). Average farm size estimates range from 0.5ha (FAO, 2018) to 1.3ha (NBS, 2019), which implies that total number of farming households is between 25 – 70 million.

Non-commercial farmers make up 60-70% of smallholder population. These are generally subsistence farmers or farmers who produce a small marketable surplus but lack resilience to shocks. Commercial farmers are still smallholders, and they make up the remaining 30-40% of the farmer population. Their production characteristics and financing needs depend on the type of value chain they operate in. Commercially tight value chains often prevail in cash crops or crops and livestock that commonly use outgrower schemes or contract farming. Commercially loose value chains are more informal but reliable supply chains, often in grains and staples traded in local markets and informal supply chains. (CGAP, 2013) Within the segment of commercial farmers, there are also differences in education level, age and attitude that affect scalability and overall profitability. (CGAP, 2017)

The global pandemic in 2020 and 2021 has significantly affected smallholder farmers globally. Negative impacts were compounded by a loss of income diversity, and farmers relied more on their own food production (60decibels, 2021) shifting from a commercial to a subsistence focus.

Informal Economy and Entrepreneurship

While Nigeria has <4 million registered companies (Dailytrust, 2019), the country has 41 million formal and informal MSMEs, of which 21% operates in agriculture (SMEDAN, 2017). This would imply between 8 to 10 million MSMEs currently active in the agricultural sector, many of which can be assumed entrepreneur out of necessity.

A bottom-up calculation arrives at a similar figure: assuming half a million up to 1 million farming communities and informal settlements (groups of 50-100 farmers each), we assume that each farming settlement has 2 to 5 buyers (total 2 - 5 million traders) and 1 to 3 inputs dealers (total 1 - 3 million agrodealers). This totals 3 - 8 million MSMEs at community level. In addition, we estimate 1 million MSMEs in the supply chain (traders, distributors and logistics) and half a million processors (frequently in cassava, palm oil,

Key Characteristics and Trends

poultry and aquaculture). A remaining number of roughly half a million is made up of other companies: equipment suppliers, service providers and other types of agribusiness.

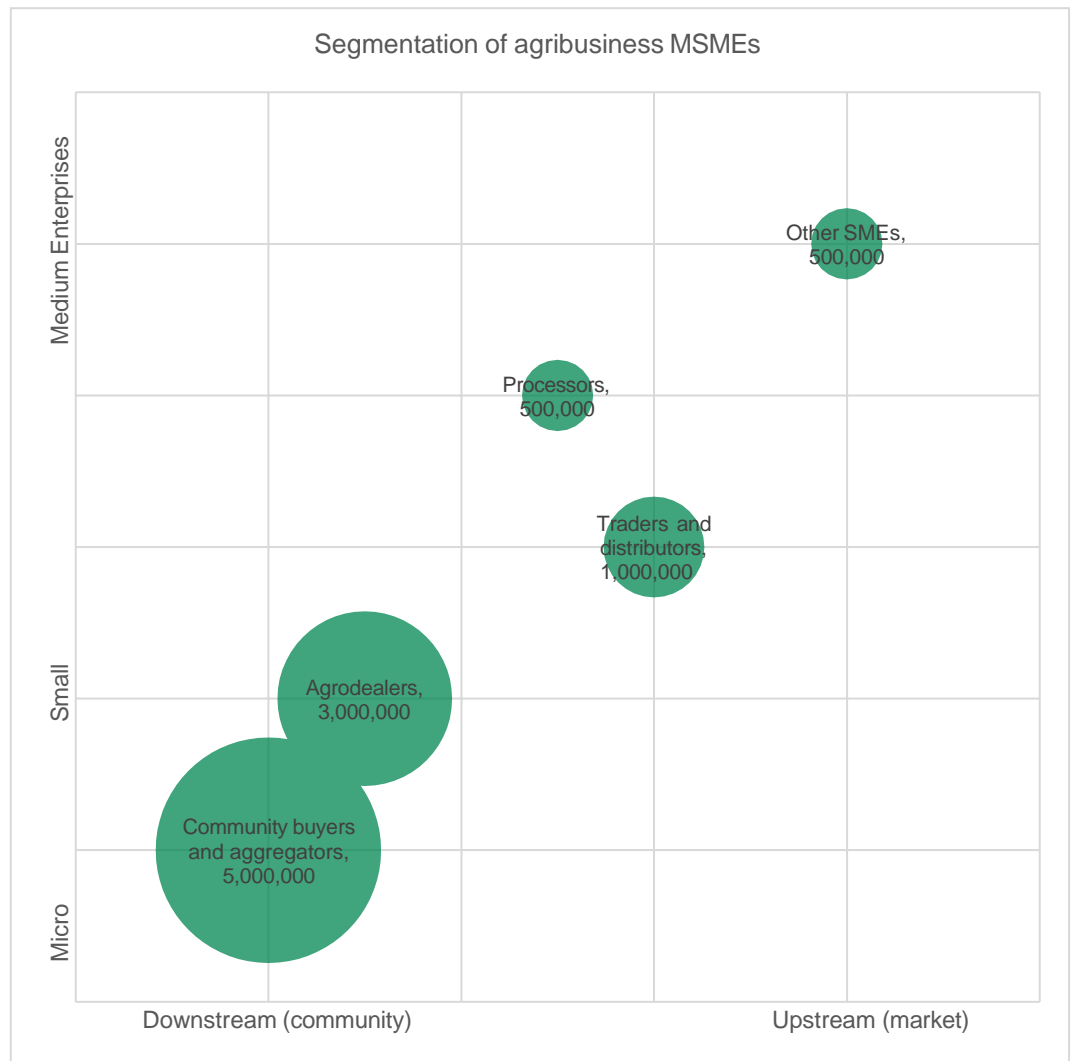


Figure 5: Segmentation of agribusiness SMEs in Nigeria (sources: SMEDAN, Agri-Logic)

Policy and Legislation

Nigerian government prioritizes agriculture and agribusiness with several trade rules and programs. The Agriculture Promotion Policy (APP), Nigeria Africa Trade and Investment Promotion Programme (NATIPP) and Zero Reject Initiative (ZRI) focus on access to national, regional and global markets. The Presidential Economic Diversification Initiative (PEDI) is aimed at increased value addition. (PWC, 2020)

Government has established trade rules for several sectors in order to protect and promote local manufacturing. Import bans are currently in place for meat, refined vegetable oils and

Key Characteristics and Trends

fat, cane or beat sugar, cocoa products, spaghetti, fruit juice and drinks (USDC, 2022). Other items are allowed to be imported but restricted from accessing foreign exchange thus making import more difficult and potentially costly, including rice, margarine, palm products, meat and poultry, vegetables, tinned fish, tomatoes and tomato pastes, dairy, maize, sugar and fertilizer (USDC, 2022).

Dairy and sugar were the most recent additions to the restricted foreign exchange list in 2020 and 2021 respectively, and specific companies who are promoting backward integration through investing in local primary production have been exempted from the restriction. These companies are allowed to access foreign exchange for imports while developing their local supply chain. A full import ban on dairy is under consideration.

There is low support among agribusiness leaders for government's agricultural policies: just over 40% find the governments' policies on closing land borders to rice imports and stopping forex applications for maize import successful policies. Stable policies and infrastructure would most help agribusinesses according to survey respondents. (AgraMondis, 2021)

A case study by the University of Ibadan for the World Trade Organization in 2005 contained critical remarks on the risks and effect of import restrictions. While Nigeria hoped that its balance-of-payments problems would be alleviated, and that the protection offered would induce increased output and employment of the domestic industry, there was little evidence that this was being achieved. Concerns and possible negative consequences of import prohibition include raising the domestic prices of import-banned products, disrupting other sectors which use the prohibited imports as raw materials, depriving government of tariff revenue and creating vested interests among domestic producers of prohibited products and among smugglers (Oyejide, Ogunkola, & Bankole, 2005). Researchers in the World Bank Economic review in 2018 argue that such policies have negative effects on net consumers of such products due to higher prices, and that poor households are vulnerable to such trade policies. The researchers estimate that an elimination of import bans is estimated to reduce national poverty rates by 2.6% (Dabalén & Nguyen, 2018).

In an effort to reduce smuggling of import prohibited items, notably rice, in 2019 Nigeria closed the land borders with Benin, Cameroon, Chad and Niger for all import of goods, borders have been partially reopened in 2020. The effect of the measure was felt in urban Lagos but is unclear on a national level. With porous borders with forests and rivers smuggling likely still occurs outside of the official border crossings. (Kwarkye & Matongbada, 2021)

Key Characteristics and Trends

Nigeria became a signatory to the African Continental Free Trade Area in 2019, creating a free trade area by dropping tariffs and removing nontariff barriers on the continent.

Expected impact is yet unclear, and relies on several prerequisites. (Olapade & Onyekwena, 2021)

Food Prices and Self-Sufficiency

In most major crops, yields per ha in Nigeria are lower than their global benchmarks. (FAO, 2022) Nigeria relies on \$10 billion of imports to meet its food and agricultural production shortfalls (mostly wheat, rice, poultry, fish, food services, and consumer-oriented foods). (USDC, 2022)

Nigeria ranks 97 out of 113 countries in the Global Food Security Index. The country scores particularly low on affordability and on natural resources and resilience. Food quality and safety has a mixed image: nutritional values are generally reasonable, while diet diversity and food safety are of concern. (Economist Impact, 2021)

Research revealed that almost 80% of farmers in North Nigeria experienced some level of food insecurity in 2020. (AFEX, 2021)

Indications are that food security will worsen as the nation's population doubles from 200 million today to around 400 million by 2050, and its urbanized population increases to reach approximately 70% by 2050. In addition, over 12% of Nigerians are undernourished. Yet each year, Nigeria loses and wastes 40% of its total food production, equal to 31% of its total land use and producing 5% of the country's GHG emissions. (World Bank, 2020)

IMF stated that the war in Ukraine can lead to increased food prices and higher fuel prices across Africa (The Citizen, 2022). Others recognize the same impact on food available for imports in Africa, however also indicate an untapped potential for Africa to become a global food exporter (Veerman, 2022).

Investments in agriculture and agribusiness address a need for sufficient and affordable food production in Nigeria.

Demand for agricultural finance in Nigeria:

₦83 trillion
\$200 billion

Demand for Financing

The total demand for agricultural finance is estimated at ₦83 trillion (\$200 billion).

Demand for financing roughly falls into 3 categories:

1. *Farmers* short term finance for inputs.
2. *MSMEs* medium to long term finance for assets and overheads.
3. *Large and Multinational Companies* short term working capital and long term investment in productive assets.

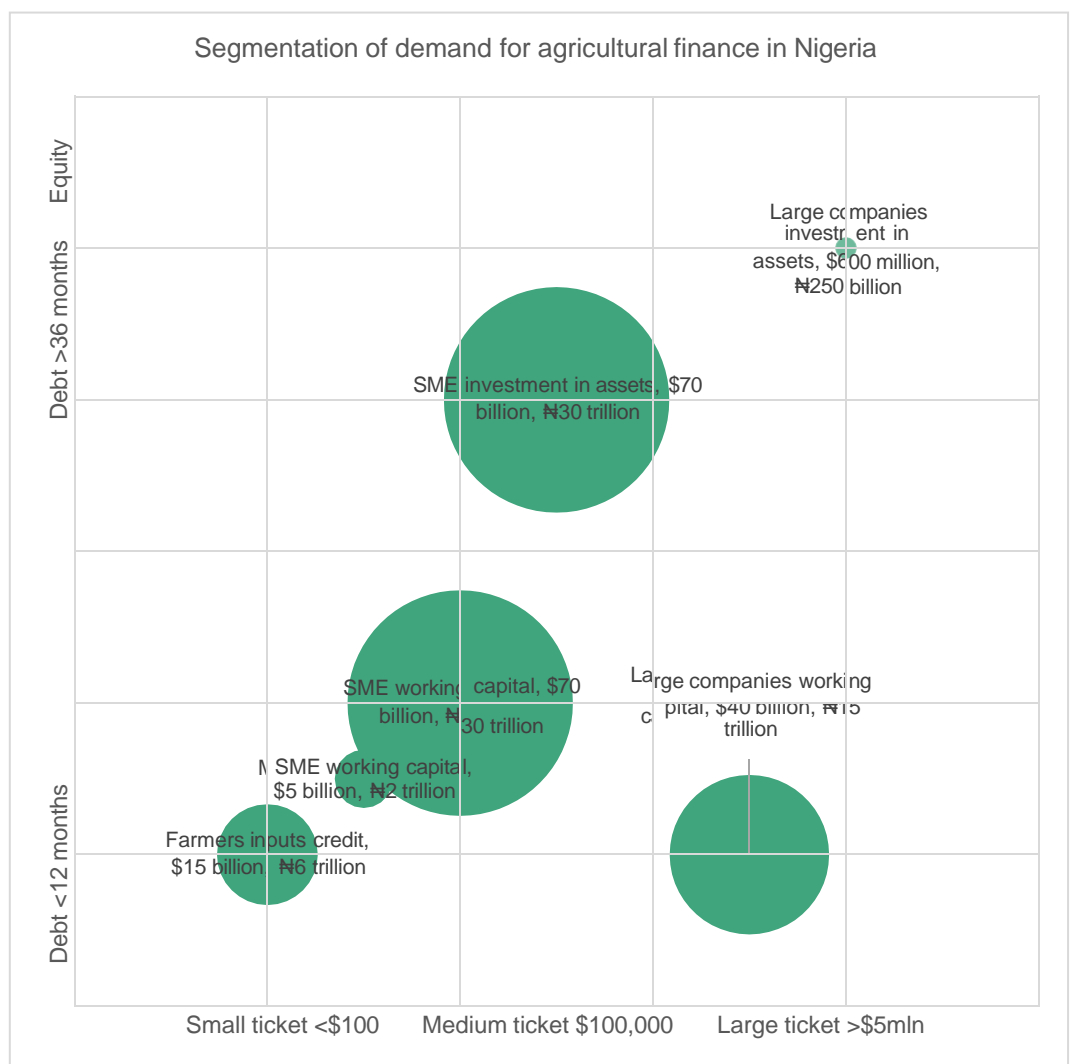


Figure 6: Demand for agricultural finance in Nigeria (source: Agri-Logic)

As a benchmark, total demand for finance by farmers is estimated at ₦8 trillion (\$20 billion) or 19% of agricultural GDP. In The Netherlands, total demand for agriculture finance is

Demand for Financing

estimated at €14.6 billion (\$16.5 billion) or 114% of agricultural GDP (FI-Compass, 2020). While the demand calculation is not following the exact same methodology for both countries, and GDP figure also includes forestry and fisheries in addition to agriculture, the ratio and benchmark still suggest that the demand estimate for Nigeria is realistic and could be expected to increase as the sector becomes more capital intensive through technology, mechanization and processing, and agricultural GDP increases.

Farmers

Ease of access to finance

Almost 80% of farmers perceives access to finance as difficult or very difficult (Figure 7). Farmers are currently largely self-funded (87%), complemented with informal funding (45%) from friends and family or community schemes. (Agri-Logic, 2021)

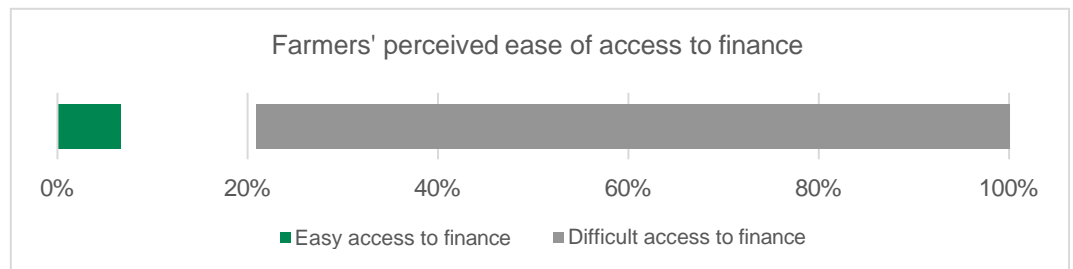


Figure 7: Farmers' perceived ease of access to finance (source: Agri-Logic)

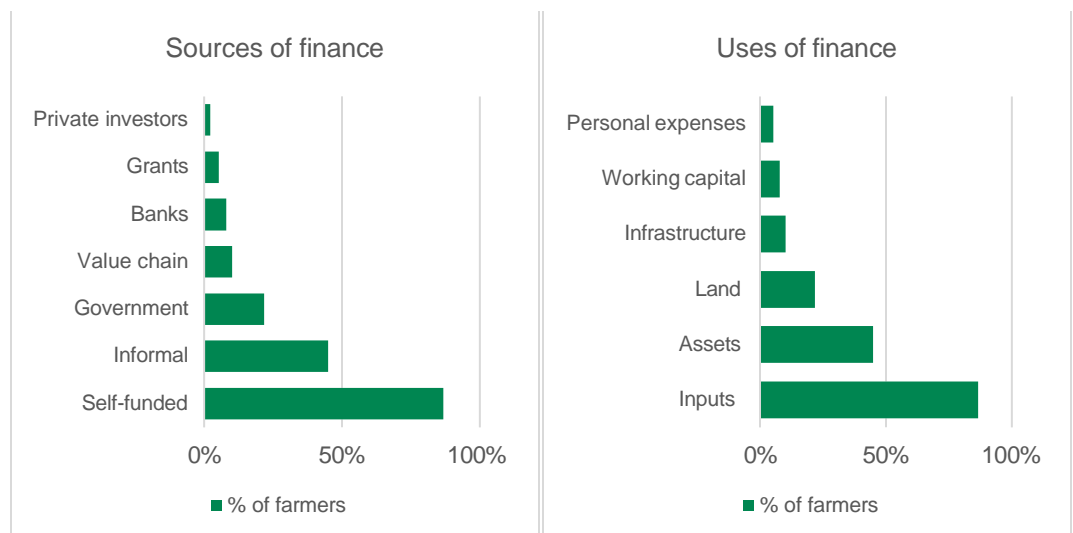


Figure 8: Farmers' sources and uses of finance (source: Agri-Logic)

Farmers in target segments largely need short-term finance to cover their expenses for a crop cycle: inputs and working capital (Figure 8). In addition, over half of farmers would use

Demand for Financing

funding for assets, land or infrastructure. (Agri-Logic, 2021) While farmers in Nigeria generally prioritize investments in their farm (44%), a large portion of smallholder farmers would primarily invest in personal expenses like home improvement, education and health care (42%) or in non-farming income diversification (14%). (CGAP, 2017)

Use of inputs is low overall. For example average use of fertilizer is 19.7 kg/ha (World Bank, 2022) (Figure 1), while the recommended application rate for major crops planted in open fields is around 130 kg/ha (Agri-Logic, 2018). Research has found that modern input use is low in aggregate but not uniformly low and considerable variation exists in the prevalence of input use and of input use intensity (Sheahan & Barrett, 2016).

Farmers in Northern Nigeria report price, packaging and quality as their major concerns in fertilizer application. Expert estimates show that fertilizer availability differs between states but is reasonable high. (Figure 9)

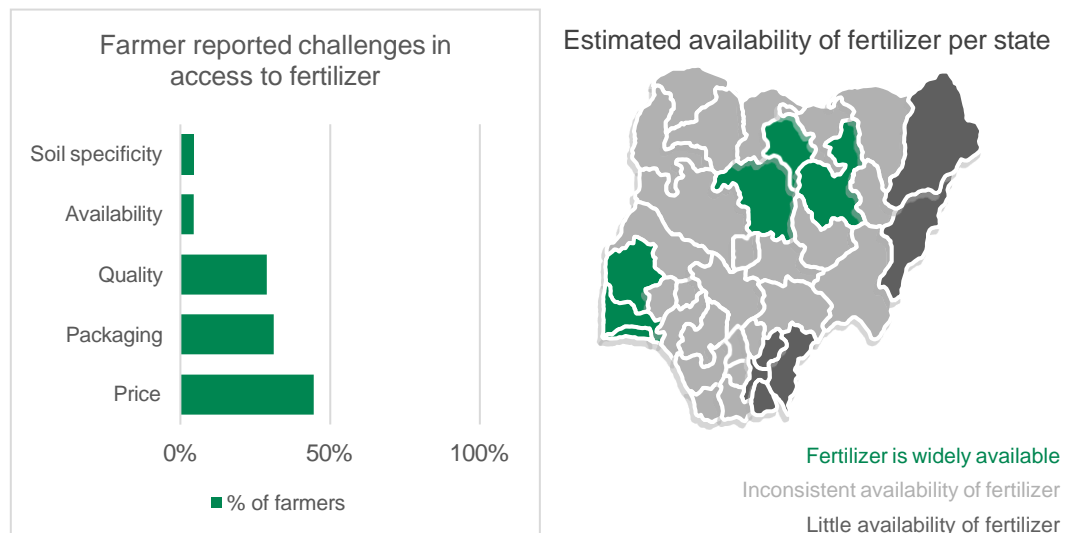


Figure 9: Challenges in access to fertilizer (source: Agri-Logic)

While availability of inputs is less of a concern in most regions, challenges exist in the business case and financing of inputs, as well as the quality of application. Research found that while fertilizer, improved seeds and irrigation would recommended to be paired, there is little combined use of these inputs on a household and even a plot level (Sheahan & Barrett, 2016). Furthermore, 98% of farmers use generic products that do not consider crop and soil characteristics, and over half of farmers use inappropriate application quantities (Figure 10).

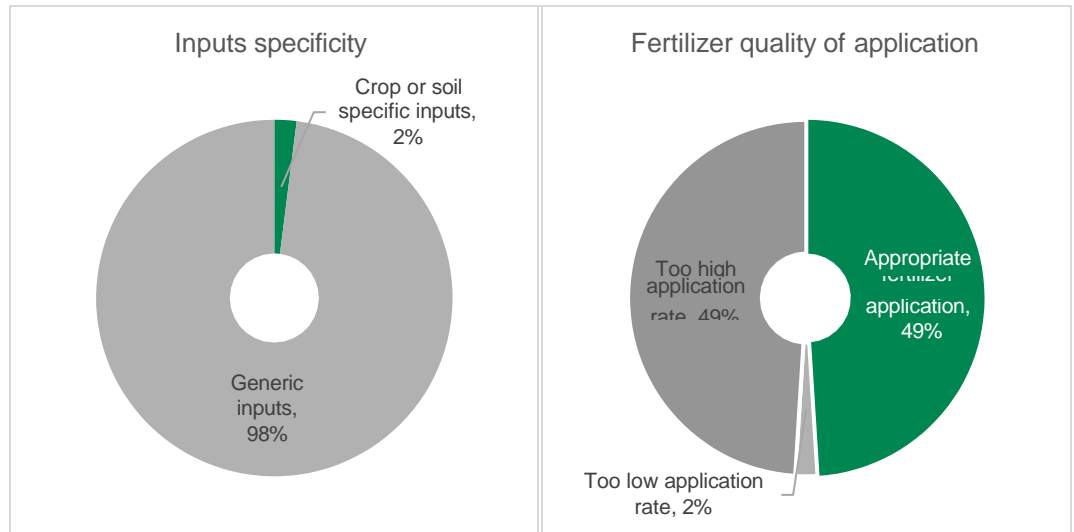


Figure 10: Quality of inputs application (source: Agri-Logic)

Two in five smallholders have a bank account in their name. Lack of money, distance to a bank, and never considering the use of an account were reported as the main reasons for not having a bank account. Some show interest in credit to support their agricultural activities, to start or expand a business, to cope with emergencies, or to buy inputs. 4% of smallholder farmers had a current loan at the time of the survey. (CGAP, 2017)

A 2019 evaluation of progress on financial inclusion reveals an increase in level of financial inclusion on a macro-perspective: more men and women are gaining access to financial services and products. However, financial exclusion rates are higher in North East and North West Nigeria, with exclusion rates above 60%. Southern geo-political regions have better financial inclusion rates although not yet near the 80% financial inclusion target. Women tend to have higher financial exclusion rates than men, rural population have a higher financial exclusion rate than urban areas. (Development Bank of Nigeria, 2019)

Typical transactions

Most commercial farmers in our survey (Figure 12) want to access between ₦500,000 - ₦5 million (\$1,000 - \$10,000), with ticket sizes starting from ₦50,000 (\$100). 94% of farmers is looking to access less than ₦50 million (\$100,000). Of those farmers looking to access finance, most farmers are looking to access more than the amount invested to date. The majority is looking for short term financing that is aligned with their crop cycle, this may be in kind or in cash. (Agri-Logic, 2021)

Demand for Financing

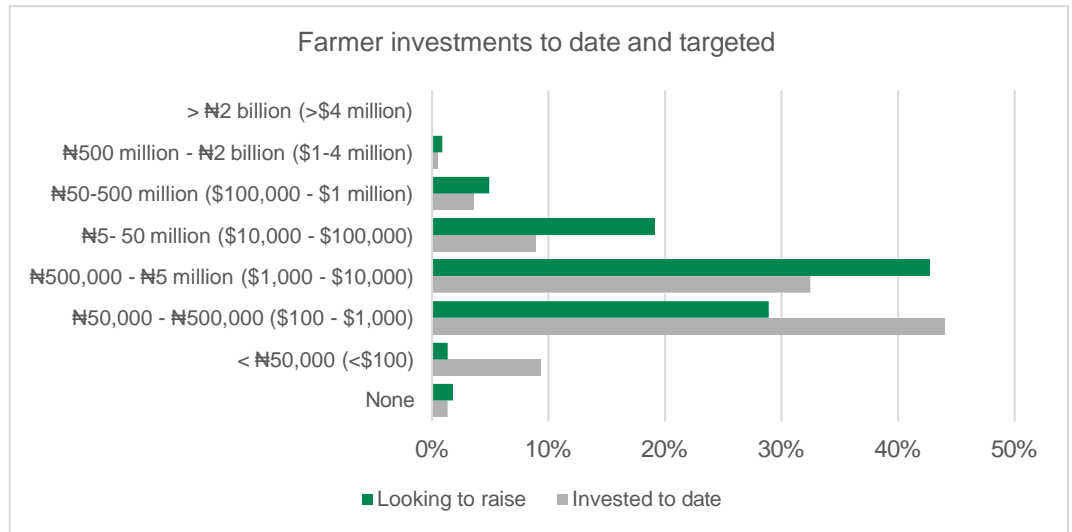


Figure 11: Farmers' invested and targeted amounts (source: Agri-Logic)

Estimated total and addressable demand

There are between 25 and 70 million farmers in Nigeria (refer to section Smallholder Farming), however the addressable market is smaller. Subsistence farmers and those without identification, connectivity or market are currently focused on survival and not on investments, we estimate an addressable market in the next ten years of 30-50% of farmers, with a 5-10% YoY growth.

Demand for finance by farmers	
Estimated current demand	Trend
2 - 6 trillion ₦	↑ +10% YoY
4 - 15 billion \$	
Required financial products	Common needs
Debt: short term <12 months	Inputs
Debt: medium term 12-36 months	Working capital
	Land or assets
Ticket size per transaction	Number of actors
50,000 - 500 million ₦	☺ 25 - 70 million farmers
150 - 1,000,000 \$	% 30 - 50% addressable market
Opportunities	Challenges
Business case for inputs	Lack of collateral
Business case for mechanization	Lack of financial management skills
Business case for large scale farming	Weather, diseases and price volatility

Figure 12: Finance demand by farmers (sources: Agri-Logic)

Opportunities for market growth

While currently the vast majority of farmers are smallholders, there is efficiency to be gained. More advanced production technologies including irrigation and greenhouses could be opportunities to boost medium scale farms with higher productivity closer to urban centers. (Van den Broek, Steemers, & Bagu, 2021)

Opportunities could also include larger scale food production. This could create rural employment and stable incomes for farming households that are currently subsistence farmers with fragile livelihoods. It can also increase food self-sufficiency and reduce food cost for the population. Plantations and agriculture estates are an investment opportunity that is currently largely untapped. Financiers do not accept land titles as collateral, and current short to medium term oriented financing will not allow investments with a long term horizon. Solutions for long term debt or equity will open up opportunities to innovate in farming.

MSMEs

Ease of access to finance

Roughly 70% of MSMEs perceives access to finance as difficult or very difficult (Figure 13). This suggest a slightly higher bankability for MSMEs compared to farmers, but still a vast majority without or with difficult access to finance. MSMEs in trade have best access to finance, while MSMEs in inputs and equipment are least financially included. (Agri-Logic, 2021)

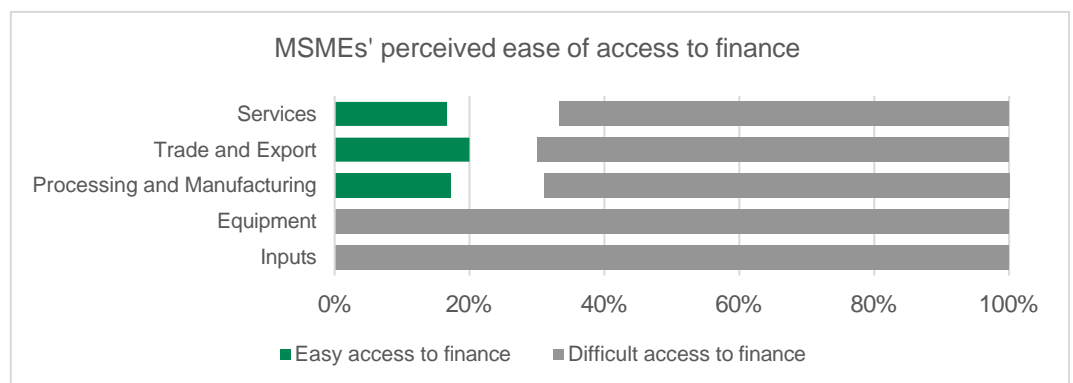


Figure 13: MSMEs' perceived ease of access to finance (source: Agri-Logic)

The vast majority of MSMEs is self-funded or informally funded by friends and family (Figure 14). Investment in assets is the most common financing need, followed by working capital for inventory, salaries or other expenses (Figure 14). Around 60% of MSMEs wants

Demand for Financing

to invest in long term assets: equipment, infrastructure or land. Traders and processors are more asset driven, while agrodealers more commonly require working capital (Figure 15).

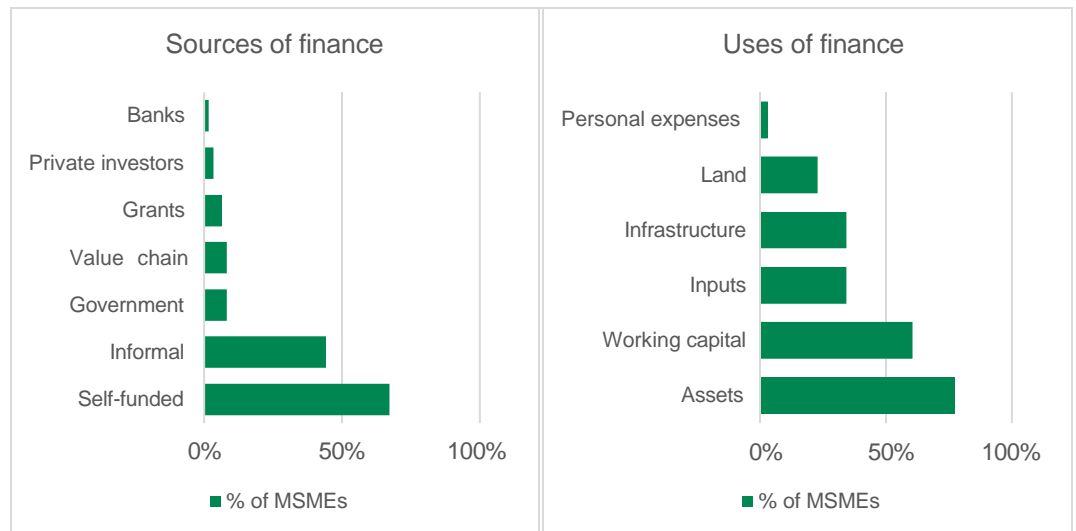


Figure 14: MSMEs' sources and uses of finance (source: Agri-Logic)

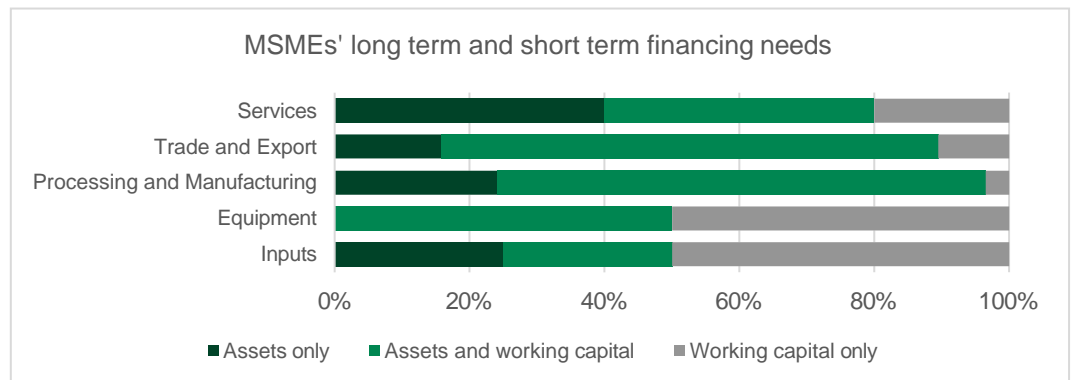


Figure 15: MSMEs' long term and short term financing needs (source: Agri-Logic)

A 2021 survey under agribusiness leaders reveals that access to finance is the greatest operational challenge but not a predictor of business success. The top factors that businesses rated important to their success are high product quality and innovation. High yield, attracting great staff and business ethics are considered important success factors by around two thirds. (AgraMondis, 2021)

Typical transactions

80% of MSMEs (Figure 16) looks to access less than ₦50 million (\$100,000), with ticket sizes starting from ₦50,000 (\$100). Companies looking to raise over ₦500 million (\$1,000,000) are all looking to fund investments in assets. Considering the blend of working

Demand for Financing

capital requirements and investments in assets, medium to long term financing would be most appropriate for this segment. (Agri-Logic, 2021)

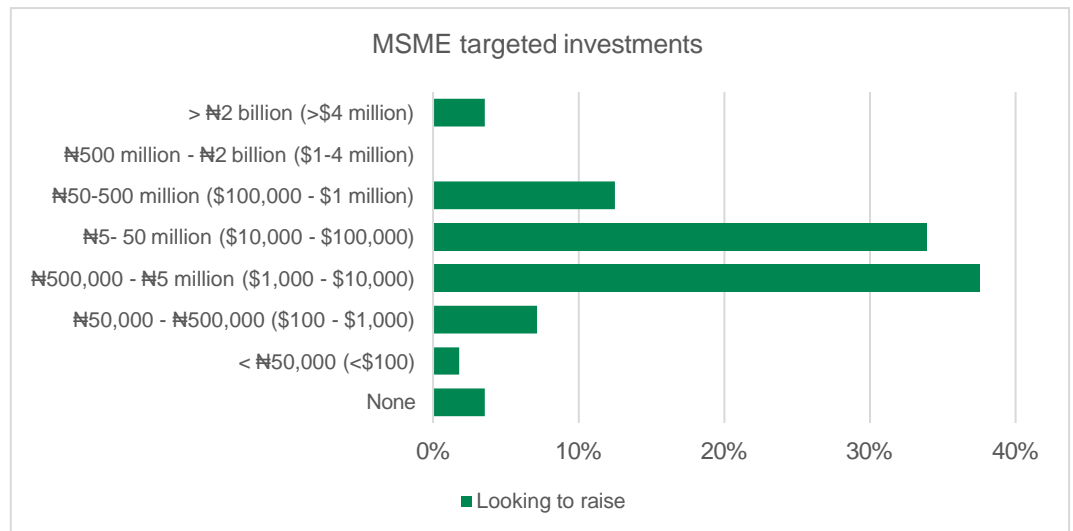


Figure 16: MSMEs' targeted amounts (source: Agri-Logic)

Estimated total and addressable demand

While many of these MSMEs operate in an informal economy, they are well-connected to value chains, generally profitable, and as such would form a fully addressable demand.

Demand for finance by SMEs	
Estimated current demand	Trend
50 - 65 trillion ₦	↑ +15% YoY
120 - 160 billion \$	
Required financial products	Common needs
Debt: medium term 12-36 months	Buildings or equipment
Debt: long term >36 months	Working capital
Equity	
Ticket size per transaction	Number of actors
500,000 - 500 million ₦	☺ 8 - 10 million MSMEs
1,000 - 1 million \$	% 50 - 100% addressable market
Opportunities	Challenges
Volume growth	Lack of compliance and formalization
Untapped opportunities for inputs	Lack of financial management skills
Untapped opportunities for equipment	
Untapped opportunities for processing	

Figure 17: Finance demand by MSMEs (sources: Agri-Logic)

Opportunities for market growth

The current underutilization of inputs and equipment can be a source of growth in the MSME segment. Fertilizer consumption in Nigeria hovered around 10kg/ha until 2015, and has since increased to an average of 20kg/ha (World Bank, 2022). In the Abuja Declaration on Fertilizer for the African Green Revolution a target of at least 50kg/ha was set (AfDB, 2006). The recommended fertilizer rate for main crops is on average 130kg/ha. While the total use of fertilizer is low compared to size of arable land, evidence has shown that out of those farmers who do use fertilizer, roughly half uses more or much more than the recommended quantity per ha. This overutilization is cost inefficient and can have negative effects in environmental pollution as well as on farmers' health. (Agri-Logic, 2018)

Compared to other parts of the world, agricultural mechanization in Sub-Saharan Africa is low. As for now, human labor remains the main source of power, cultivating over 70% of the arable land. Animal traction is used on one-quarter of land. The low rate of mechanization is in part explained by the small average farm size in Nigeria. From 5 or 6 ha, tractors hire becomes attractive. Another factor is the low number of working tractors in the country, which is further compounded by poor utilization of the existing tractor fleet, which has the technical potential to cultivate at least four times as much land as is currently cultivated by tractor. The majority of tractors in Nigeria today are being hired out, informally or via formal hire platforms. Current demand for tractor services outstrips supply by at least a factor five, there is a demand for an additional 100,000 tractors over the next ten years. (AgraMondis, 2021)

Scarcity and low quality of warehouses and logistics are a source of food losses, and storage and cold chains provide an opportunity. Specifically in perishable products (vegetables, dairy, proteins), improved storage and logistics is critical for the viability of the entire chain. (Van den Broek, Steemers, & Bagu, 2021)

Unaddressed needs for inputs and equipment can provide opportunities in fertilizer distribution and equipment rental or sale, especially if combined with agronomic advice on correct application. This can impact MSMEs both by scaling or diversifying existing enterprises, and by creating opportunities for new entrepreneurs. This could strengthen the growth of the MSME sector, as well as its demand for finance.

Large and Multinational Companies

Ease of access to finance

Large and multinational companies include a number of plantations, large scale processors (rice and flour milling, meat and poultry, seafood, cocoa, tomatoes, fruits), inputs manufacturers (feed milling and fertilizer blending) as well as traders and exporters. This is

Demand for Financing

a wide variety of companies with revenues ranging from ₦1 billion (\$2 million) to ₦500 billion (\$1 billion). Some of these are foreign-owned and started with investment from the parent company, while others are Nigerian companies that have grown organically or were built with revenue from other sectors.

Many of these companies are self-financed by their owners, either individuals or holding companies. They are also able to access finance in the commercial banking sector for working capital. Some are able to invest in assets, although the volatile foreign exchange rate poses a risk for long term investments in assets that have to be purchased in foreign currency.

Typical transactions

Typical transaction in this segment fall into two categories. Large transactions for investment in assets are often >₦2 billion (>\$4 million) and require a long term repayment term. Medium to large transactions in the range of ₦50 million to ₦2 billion (\$100,000 - \$4 million) are used to fund working capital, and are most appropriate with a revolving nature.

Estimated total and addressable demand

These companies are well-established and if collateral requirements and foreign exchange risks can be managed have a financing demand that is fully addressable.

Demand for finance by large and multinational companies			
Estimated current demand		Trend	
5 - 20 trillion	₦	↑	+20% YoY
10 - 50 billion	\$		
Required financial products		Common needs	
Debt: short term <12 months		Working capital	
Debt: long term >36 months		Processing and logistics equipment	
Equity			
Ticket size per transaction		Number of actors	
100 million - 40 billion	₦	☺	500 - 200,000 companies
250,000 - 100 million	\$	%	75 - 100% addressable market
Opportunities		Challenges	
Volume growth		Supply chain and sourcing control	
Import substitution		Foreign exchange and price volatility	

Figure 18: Finance demand by large companies (sources: Agri-Logic)

Opportunities for market growth

There are several market opportunities for large companies. There is a market demand for existing cash crops that offers opportunity for Nigeria. According to the International Trade

Center, total untapped export potential for Nigeria stands at \$2.2 billion. The products with greatest export potential from Nigeria are cocoa beans & products, nuts, and oil seeds. Nuts shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth \$516 million. (ITC, 2022)

Incentives currently in place for processing and food self-sufficiency, combined with an increasingly accessible regional market through AfCFTA, imply an opportunity to invest in value addition in country for the local market as well as export. Opportunities for processing and manufacturing exist in cassava (flour, starch and ethanol), cereals (staples and consumer products), export processing (cashew shelling, mechanized ginger processing), inputs (feed and fertilizer) and more.

In addition, there are opportunities in services industries around agriculture value chains. Technology (protected production, mechanization, processing and data) is a fast-growing segment and market opportunity.

Innovators

The demand for access to finance is calculated based on business as usual, which is often low technology and small scale. Each market segment has opportunities for growth. In farming, this may include larger scale production or more technologically advanced production systems. Access to inputs, mechanization, logistics and processing offer growth opportunities for SMEs and large companies. While active demand in this segment is currently low and therefore unquantified, there is a potentially large investment opportunity if viable business models can be developed.

Supply of agricultural finance in Nigeria:

₦1.6 trillion
\$4 billion

Self-financed by companies:

₦6 trillion
\$15 billion

Supply of Financing

The total supply of agricultural finance is estimated ₦1.6 trillion (\$4 billion), with an additional ₦6 trillion (\$15 billion) self-financed by entrepreneurs. Supply of financing roughly falls into these categories (Figure 19 & Figure 20):

1. Commercial banks and micro-finance banks
2. Public finance schemes
3. Value chain finance through supply chain aggregators
4. Informal investment schemes and remittances

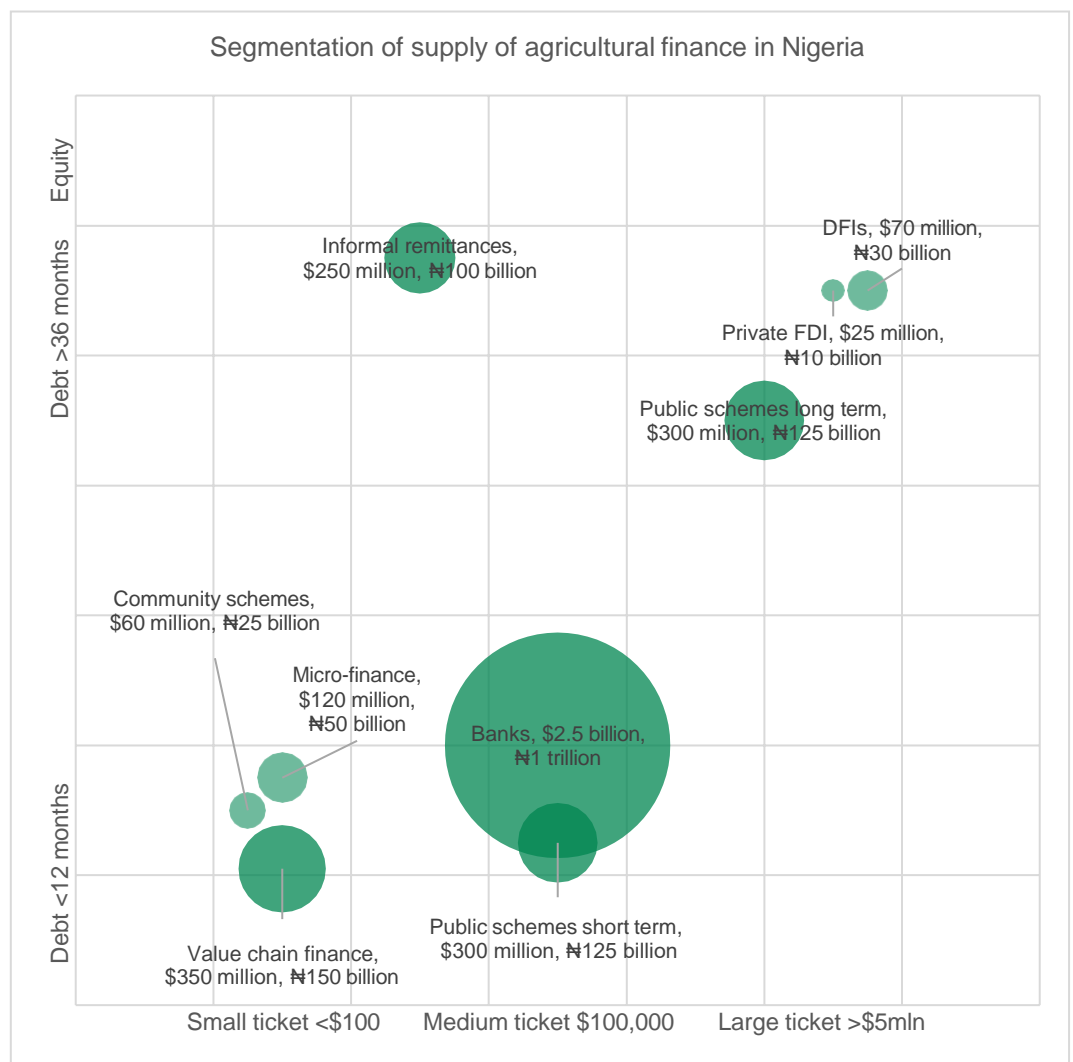


Figure 19: Supply of agricultural finance in Nigeria (source: Agri-Logic)

Supply of Financing

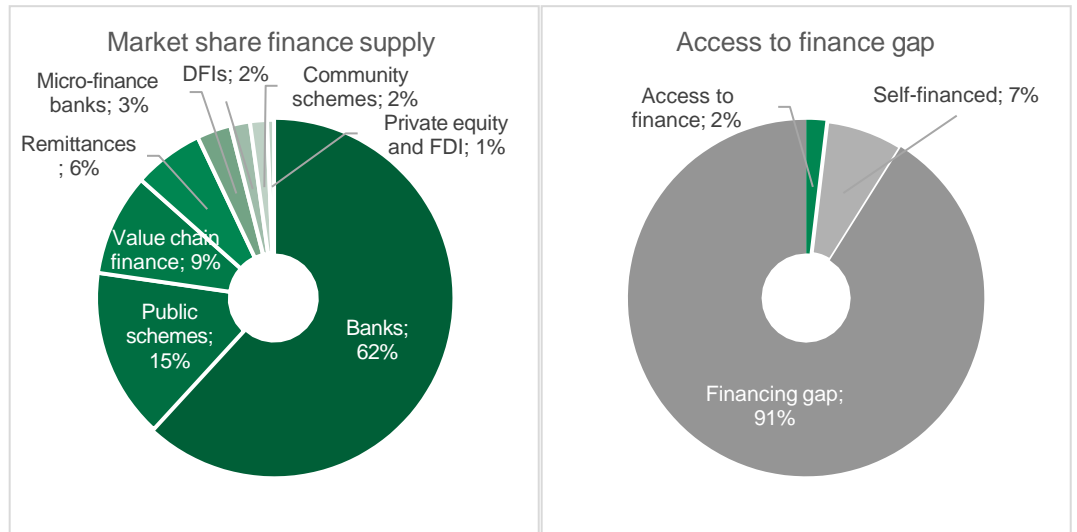


Figure 20: Supply of agricultural finance, market shares (source: Agri-Logic)

Banks

Total credit provided by Deposit Money Banks (DMBs) to private sector has seen growth since 2019. Agricultural credit represents ~5% of total credit by Nigerian banks, with an increasing share of total credit as well as above average year-on-year growth by ~35%. (NBS, 2020)

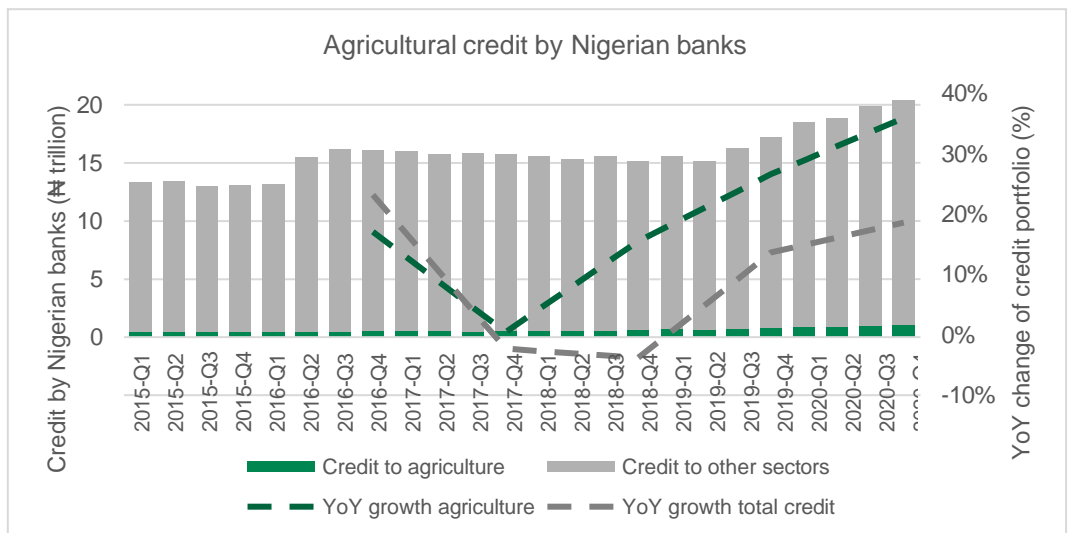


Figure 21: Bank credit trends (sources: CBN, NBS, Agri-Logic)

Nigerian banks generally have liquidity, and the Central Bank of Nigeria incentivizes private sector lending through a target loan-to-deposit ratio of 65% (Nairametrics, 2021) and sector-specific interventions funds such as the Agricultural Credit Guarantee Scheme Fund

Supply of Financing

(ACGSF). Stakeholder internal to banks as well as companies who have applied for loans from banks have reported several challenges:

- Strict collateral requirements are in place. Specifically for SME loans, banks will require real estate as a collateral. Inventory, invoices or moveable assets are rarely accepted.
- Many banks lack knowledge on lending to SMEs and/or agriculture. This limits portfolio growth, as well as results in a high portion of non-performing loans.
- Foreign exchange and price volatility are risks for the performance of the portfolio and hedging mechanisms are not commonly available.
- Banks branches are mainly located in major cities, and local presence and accessibility in rural areas is limited.

As a consequence of these challenges, bank credit to agribusiness is currently mainly available to medium to large processors and traders with an office in major cities and with personal assets as a collateral. 85% of the current banks' credit portfolio are loans through branches in Lagos, Port Harcourt and Abuja (NBS, 2019). Less than 5% of total agricultural credit is currently guaranteed under the AGCSF, mainly small loans (CBN, 2020).

While the total agricultural credit portfolio of Nigerian banks is expected to continue its growth, it is unlikely that this credit will become more accessible to SMEs and farmers.

Agricultural credit by deposit money banks	
Estimated current supply	Trend
1 - 1.5 trillion ₦	↑ +35% YoY
2 - 4 billion \$	
Common offerings	Risk and return
Debt: short term <12 months	% 20-35% interest per annum
Debt: medium term 12-36 months	⚠️ 5-10% non-performing loans
Blended finance	
Ticket size per transaction	Number of actors
5 million - 1 billion ₦	📍 23 licensed banks
10,000 - 3 million \$	😊 100,000 - 300,000 beneficiaries
Opportunities	Challenges
Liquidity	Collateral requirements
Incentives for agricultural lending	Lack of sector specific knowledge
	Foreign exchange and price volatility
	Office and outreach infrastructure

Figure 22: Finance supply by banks (sources: CBN, NBS, Agri-Logic)

Micro-Finance

There is a large number of Micro Finance Banks (MFBs) licensed by the Central Bank of Nigeria. Consolidation is taking place with fewer MFBs currently operating (nearly one

Supply of Financing

thousands MFBs in 2016, reduced to around 700 MFBs in 2020), total credit by MFBs remains stable at around ₦ 250 billion (\$650 million). (NBS, 2020)

World Bank concludes in 2017 that aspirations have only marginally been achieved. MFBs remain small and reach an estimated 1-10% of the target population. Furthermore, interest rates are high, and for farmers living in poverty debt at high interest rates is generally not a way out of poverty. As with commercial banks, MFBs often prefer urban areas. (World Bank, 2017)

In an international benchmark, only 10% of MFBs is profitable. Micro finance investors that commonly work in agriculture are often impactful, but none is self-sustainable. (Lee, What Can We Learn From Microfinance, 2022)

Considering current challenges, it is unlikely that Nigerian MFBs will be able to grow significantly in the near future.

Agricultural credit by micro finance banks	
Estimated current supply	Trend
50 - 100 billion ₦	+0% YoY
120 - 240 million \$	
Common offerings	Risk and return
Debt: short term <12 months	% 50-200% interest per annum
	⚠️ 15-30% non-performing loans
Ticket size per transaction	Number of actors
50,000 - 500,000 ₦	📍 700 licensed MFBs
\$100 - \$1,000 \$	😊 500,000 - 1 million beneficiaries
Opportunities	Challenges
Building on informal structures	Licensing and enforcement
	Transaction cost and cost of capital
	High proportion non-performing loans
	Over-indebtedness

Figure 23: Finance supply by MFBs (sources: CBN, NBS, World Bank, Agri-Logic)

Public Finance Schemes

The Central Bank of Nigeria is the main public financier releasing funds into agriculture. CBN's Anchor Borrowers Programme disburses ₦100 billion annually to aggregators (private companies, commodity associations and state governments) who in turn provide prefinance or inputs on credit to farmers. 85-90% of farmers in scope of the Anchor Borrowers Programme are located in North Nigeria, 70% is disbursed to private actors and commodity associations (CBN, 2018). This is further elaborated in section *Value Chain Finance*.

Supply of Financing

The Commercial Agricultural Credit Scheme releases funds for large scale projects, an estimated ₦100 billion annually. About 45% of funds is invested in production, 30% in processing, and 25% in logistics and inputs. (CBN, 2018)

Other public schemes release an estimated total ₦100 - ₦200 billion into agricultural chains annually. These schemes are implemented by entities including Bank of Industry, Bank of Agriculture and NIRSAL Micro Finance Bank.

While many stakeholders dismiss the contribution of public finance schemes in Nigeria with a perception of inefficiency, bias and corruption, the statistics do show that these schemes are in the top 3 financiers of agriculture and agribusiness in Nigeria. Research concluded that the Anchor Borrowers Programme, duty free imports of agricultural equipment, and NIRSAL have positively impacted export commodity productivity and supply volume (Udoh & Adelaja, 2021).

Repayment rates are not easily retrievable, but assuming cumulative repayment to outstanding portfolio in the available annual reports, we do observe a large gap of 30-60% between expected and realized repayment amounts (African Business, 2022). It is unclear whether this should be attributed to capability or intent of the institutions, or to non-performance of the portfolio.

Agricultural credit by public finance schemes	
Estimated current supply	Trend
200 - 400 billion ₦	+25% YoY
500 million - 1 billion \$	
Common offerings	Risk and return
Debt: short term <12 months	% 5-15% interest per annum
Debt: long term >36 months	⚠️ 30-60% non-performing loans
Blended finance	
Ticket size per transaction	Number of actors
100 million - 5 billion ₦	📌 5-10 public banks
250,000 - 10 million \$	😊 100 - 5,000 beneficiaries
Opportunities	Challenges
Low interest funds	Efficiency and repayment
Naira denominated funds	Perceived beneficiary bias
Incentives for GDP diversification	Perceived complexity of access

Figure 24: Finance supply by public finance schemes (sources: CBN, Agri-Logic)

In February 2022, CBN announced a *Race to US\$200 billion in FX Repatriation (RT200 FX)*. The program is targeted at increasing non-oil exports, and consists of a value-adding exports facility; a non-oil commodities expansion facility; a non-oil FX rebate scheme; a

dedicated non-oil export terminal; and a biannual non-oil export summit. (CBN, 2022) At the time of publishing this report, details on the amounts were not yet known. While the program is not exclusively targeted at agriculture, it is expected that a significant portion of this intervention will find its way to agricultural processing and trade.

Value Chain Finance

Value chain finance works with aggregators. Globally, each aggregator provides financing for on average 4,000 farmers and the SMEs that connect their supply chain (CSAF, 2021). In Nigeria, aggregators are typically exporters, traders and licensed buying agents. Some fertilizer manufacturers, cooperatives and processors also provide value chain finance to their suppliers or buyers.

80% of SMEs has access to credit or prefinance and 63% of SMEs provide credit or prefinance to their customers or suppliers (Figure 25). This makes value chain finance the most common source of financing for SMEs, after personal and informal funding. What stands out is the inverse relationship between receiving and providing access to finance: agrodealers are most likely to provide credit to farmers, while they are least likely to receive credit from their supplier. (Agri-Logic, 2021)

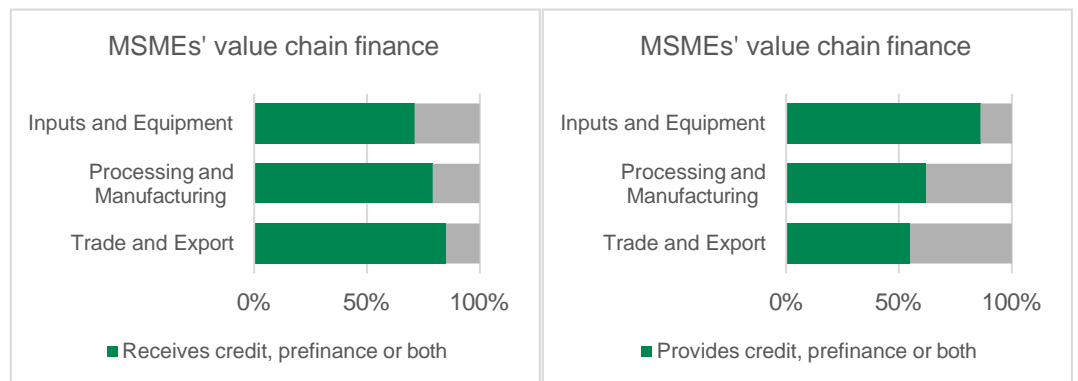


Figure 25: MSMEs' access to and provision of value chain finance (source: Agri-Logic)

Ten percent of farmers in our survey reports having been able to access value chain finance, commonly as inputs on credit (Figure 8). This is confirmed by farmers perceived ease of access to finance: cash crops, grains and vegetables are tighter value chains that more regularly use value chain finance structures, and have a higher perceived ease of access to finance by farmers (Figure 26). (Agri-Logic, 2021)

This is in line with international observations. Globally only a portion of commercially tight value chains is addressable through value chain finance (Lee, Tight Value Chains, 2022).

Supply of Financing

Input credit is available to less than 10% of the smallholder population, 96% of inputs are paid for in cash, and 90% requires immediate payment. (CGAP, 2017)

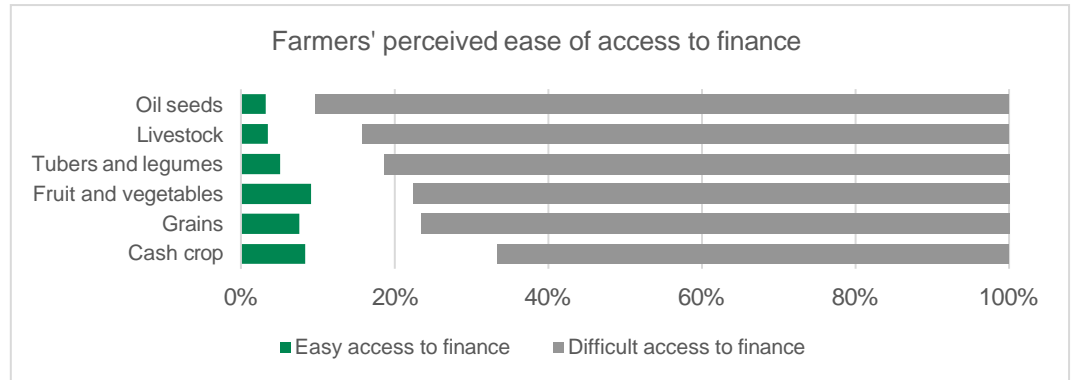


Figure 26: Farmers' perceived ease of access to finance by sector (source: Agri-Logic)

A 2021 survey among farmers in Nigeria (Figure 27) (AFEX, 2021) reveals that value chain finance from buyers represents the largest proportion of finance provided to smallholder farmers, however currently only 6.5% of farmers have access to this form of credit. The survey confirms that access to smallholder finance is a more significant challenge for smaller farms (<2ha) in comparison to larger farms (>5ha).

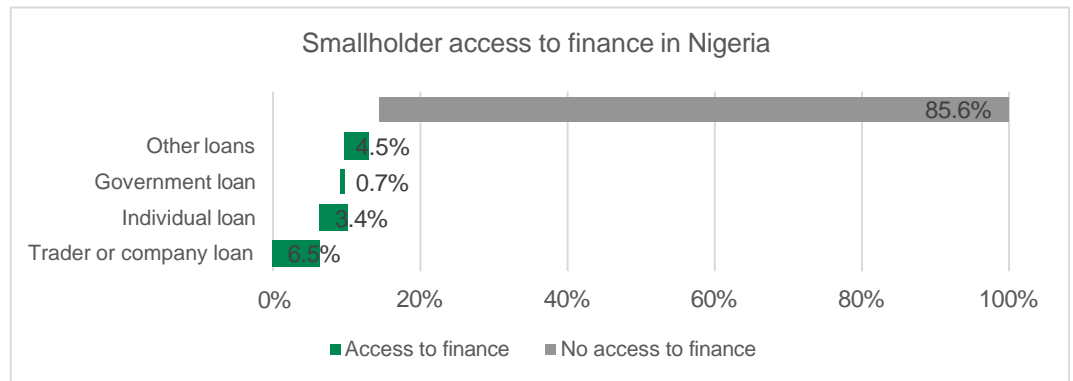


Figure 27: Smallholder access to finance in Nigeria in 2021 (sources: AFEX, Agri-Logic)

CSAF members disbursed a total to \$559 million to global value chains connecting 2.6 million farmers in 2020, averaging \$216 per farmer per season, the value per borrower is lower in Sub-Saharan Africa. (CSAF, 2021)

Value chain finance in Nigeria ranges between \$50 and \$250 per farmer, and is often provided in kind and through a network of traders and buying agents. The value flows through the chain, with many intermediary buyers or distributors being both the recipient and provider of value chain finance. What is working capital for an SME may be access to

Supply of Financing

inputs or an investment in productivity for a farmer in the same transaction. Value chain finance frequently connects input and output chains: with inputs being provided on credit and repaid in output. Considering strong value chain relations and a mutual interest, interest rates are often single digit. Most value chain actors report repayment rates >90%.

Aggregators often take loans for working capital from public intervention funds including the Anchor Borrowers Programme. CBN reported a disbursement of ₦118 billion in 2018 (CBN, 2018), financing a significant portion of 50-75% of value chain finance currently supplied in the market.

Some Nigerian commercial banks provide trade finance against contracts or inventory. Foreign-owned entities are less likely to provide value chain finance directly, because of their lower supply chain control, lower trust in value chain relationships, and exposure to foreign exchange volatility. They may have access to better international credit terms and sometimes provide prefinance to a partner exporter based on supply contracts.

Agricultural value chain credit			
Estimated current supply		Trend	
75 - 300 billion	₦	↑	+10% YoY
200 - 750 million	\$		
Common offerings		Risk and return	
Debt: short term <12 months		%	5-10% interest per annum
		⚠	0-10% non-performing loans
Ticket size per transaction		Number of actors	
25,000 - 200,000	₦	◆	250 - 1,000 aggregators
\$50 - \$500	\$	☺	1 - 4 million beneficiaries
Opportunities		Challenges	
Building on commercial structures Proven business case		Collateral demand on aggregator Scalability to looser value chains Not suitable for long term investments	

Figure 28: Finance supply by value chain companies (sources: AFEX, CSAF, Agri-Logic)

Private Equity

Private investors in Africa include venture capital (55%), private equity, accelerators, angel networks, foundations and family offices. (Briter, 2020)

Estimated total private equity and venture capital invested in Africa is \$4.9 billion, of which 30% is invested in Nigeria (\$1.5 billion), and 4% in agriculture across the continent (\$200 million). Largest investor origins are United States (63%), United Kingdom (7.5%) and

Supply of Financing

South Africa (6%) (Briter, 2021). The invested amount in 2021 increased by 2.5x compared to the year before (The Big Deal, 2021).

Agricultural finance by private equity			
Estimated current supply		Trend	
10 - 20 billion	₦	↑	+100% YoY
25 - 50 million	\$		
Common offerings		Risk and return	
Debt: long term >36 months		%	25-100% return per annum
Equity		⚠	10-25% non-performing assets
Ticket size per transaction		Number of actors	
1 - 4 billion	₦	♥	10 - 50 funds
\$3 - \$10 million	\$	☺	5 - 10 beneficiaries
Opportunities		Challenges	
Sector growth		Limited interest in real economy	
Patient capital		Risk reward profile of agribusiness	

Figure 29: Finance supply by private equity (sources: Briter, Agri-Logic)

While Nigeria is Africa’s largest destination for private equity, agriculture struggles to raise investments. Experts indicate that agribusiness ventures often have to be pitched as ecommerce or fintech in order to gain traction with investors, even when these are not their core activities.

Companies that have raised ‘above-average’ early-stage rounds are either non-Africa-based or founded by foreigners. (Briter, 2020) Experts identified that many international investments follow diaspora lines, and are often based on a previous connection between investor and investee. This is confirmed by experience in other continents (Inter-American Development Bank, 2012).

While private equity currently represents a small supply of finance to Nigerian agribusiness, it is a fast growing, and one of few sources able to provide long term debt or equity.

Development Finance Institutions

While development finance institutions (DFIs) are active in Nigeria, the vast majority of their investments focuses on public projects and not on private sector. Of the private sector investments, most are indirect through *Banks* and *Micro-Finance*, and as such this finance supply is already captured in the corresponding sections.

Supply of Financing

Transaction volume and value for direct investments is low and varies between years (Figure 30). Peaks in 2012, 2015 and 2018 are all related to the same fertilizer company with a long term relation with IFC, including a \$1 billion mega deal in partnership with other DFIs and commercial banks (IFC, 2018).

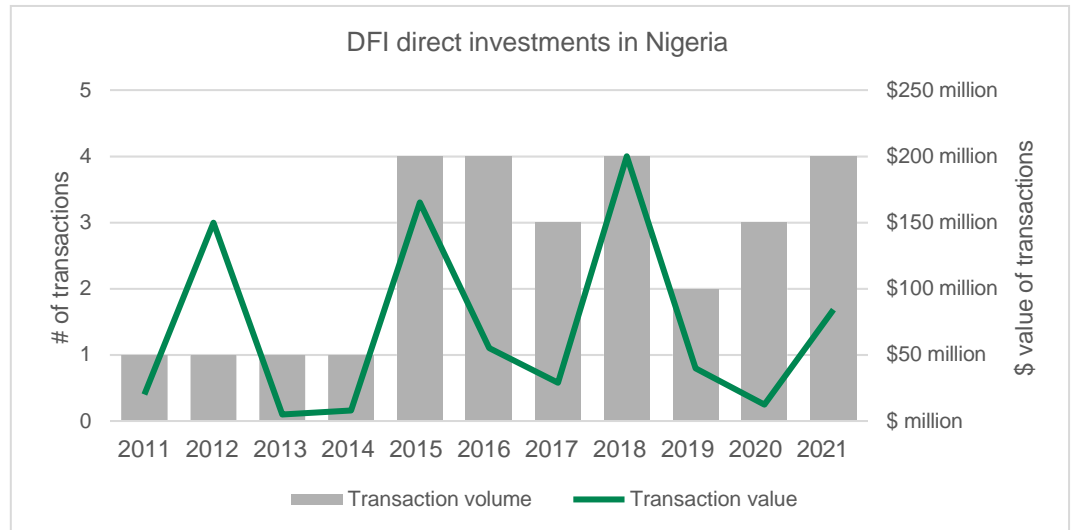


Figure 30: DFI investment trends (sources: IFC, CDC, FMO, DCF, Proparco, Agri-Logic)

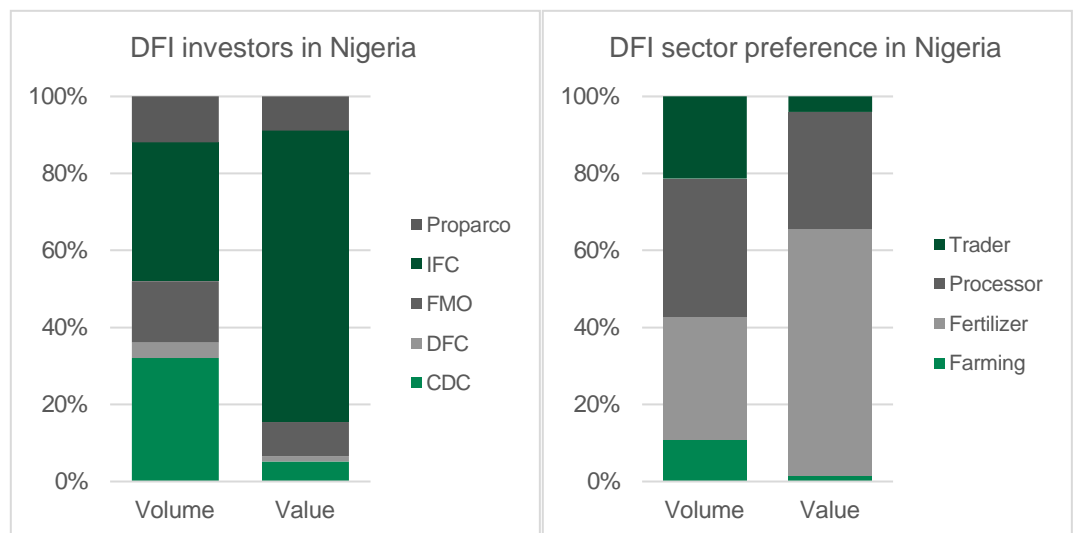


Figure 31: DFI investors' focus (sources: IFC, CDC, FMO, DCF, Proparco, Agri-Logic)

Considering investments in the last decade, IFC is the largest DFI investing in Nigeria, both in transaction volume and value. Processing has largest transaction volume while fertilizer has largest investment value. (Figure 31) The African Development Bank (AfDB) has to

Supply of Financing

date only invested in sovereign agriculture projects, which has not been included in the scope of this report.

There is an emerging trend for DFIs to show interest in SME investing, and we may see a change in investment practices in the coming years, possibly favoring agribusiness investments (AgFunderNews, 2022). Furthermore, DFIs are showing an interest in partnering with Nigerian banks to grow their agribusiness and impact portfolio indirectly. For example, Invest International, FMO and Access Bank have recently partnered in setting up a Dutch Desk, with the goal of facilitating access to finance for innovative and socially impactful Dutch and Nigerian trade and investment opportunities. This also includes agribusiness investment opportunities.

Agricultural investment by DFIs	
Estimated current supply	Trend
20 - 40 billion ₦	+0% YoY
50 - 100 million \$	
Common offerings	Risk and return
Debt: long term <36 months	% 5-15% interest per annum
	⚠️ 0-5% non-performing loans
Ticket size per transaction	Number of actors
2 - 60 billion ₦	♥️ 5 - 20 DFIs
5 - 150 million \$	😊 10 - 50 beneficiaries
Opportunities	Challenges
Trade and processing	Procedures
Reasonable target returns	Country specific knowledge
Blended finance	

Figure 32: Finance supply DFIs (sources: IFC, CDC, FMO, DCF, Proparco, Agri-Logic)

Informal Community Schemes

Informal schemes rely on trust and social control to ensure appropriate financial management, and target the least bankable communities. Schemes are self-funded by members, and promote savings behavior and periodical access to amounts that can be used for unexpected expenses or as investment.

A Rotating Savings and Credit Association (ROSCA) uses a common fund to which individuals contribute a set amount on a regular basis (usually monthly), while one member withdraws the funds at each meeting. (Investopedia, 2021) The Village Savings and Loan Association (VSLA) model creates self-managed and self-capitalized savings groups that use members' savings to lend to each other. Groups often continue to exist for years (89%

Supply of Financing

exists more than 5 years), and commonly include women (78%) in rural communities. (VSLA, 2022) Savings collectors, money guards and shopkeepers are individuals who provide safekeeping as a business service.

This segment represents a sizeable supply of finance at a better risk and return ratio compared to micro finance. 28% of smallholder households in Nigeria reports to have used at least one kind of informal community finance scheme (Figure 33), and if they do they report to use those services regularly (CGAP, 2017).

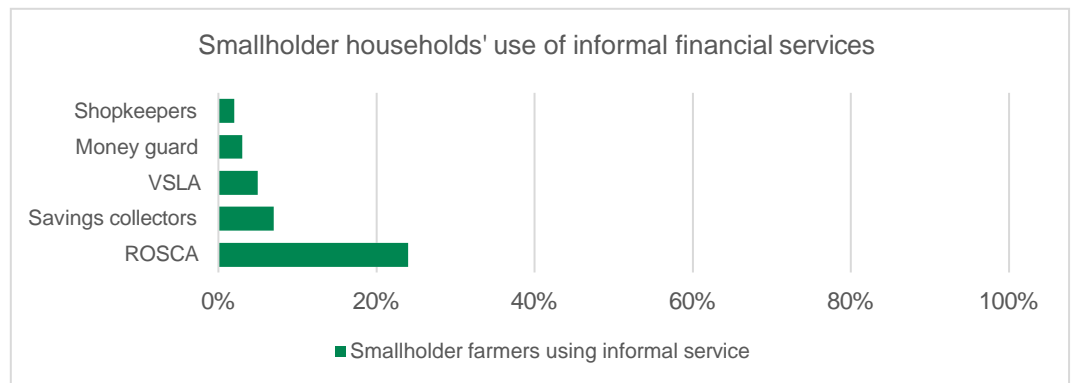


Figure 33: Smallholder households' use of informal financial services (source: CGAP)

Agricultural credit by informal groups	
Estimated current supply	Trend
25 - 50 billion ₦	↑ +5% YoY
60 - 120 million \$	
Common offerings	Risk and return
Debt: short term <12 months	% 10-20% interest per annum
	⚠️ 0-5% non-performing loans
Ticket size per transaction	Number of actors
2,000 - 50,000 ₦	💎 250,000 - 100,000 groups
\$5 - \$150 \$	😊 5 - 10 million beneficiaries
Opportunities	Challenges
Trust built into the system Appropriate for least bankable High impact with small amounts	Implementation needs to be subsidized

Figure 34: Finance supply by informal groups (sources: CGAP, VSLA, Agri-Logic)

While VSLAs and ROSCAs are designed to operate in a self-sustaining and low-cost manner, mobilization and structuring in line with best practices is most times a task for development professionals. The technical assistance required for starting informal

community schemes is often grant-funded or embedded in supply chain extension programs. While the model assumes technical support is only required in the startup stage of these schemes, several implementers indicate that they continue their involvement with VSLAs and ROSCAs for several years to ensure smooth continuation as well as having an entry point for further supply chain interventions. Chapter *Solutions and Best Practices* includes two case studies on *Informal and Community-Based Schemes*.

Informal Investors and Diaspora

There are between 1 and 2 million Nigerians in the diaspora, and remittances are estimated at \$20 - \$25 billion annually. For 2018, this was 11x the inflow of Foreign Direct Investment, and 7x the inflow of official development aid. (PWC, 2019) Remittances into the country fell in 2020 and 2021, which was attributed to the downturn in developed economies, coupled with Nigerian foreign policy that had left diaspora Nigerians with little option but to transfer funds through black market channels. (Nairametrics, 2021)

It appears that only a very small portion of diaspora remittances reaches agriculture. Even if it reaches rural households, the funds will more likely be used for personal and household expenses and not for business investment. Only 2% of farmer and SME respondents reports having received funds from friends and family outside of Nigeria to finance their business (Agri-Logic, 2021). In Ghana, nearly 30% of remittances are used for the purpose of investment and construction of houses (PWC, 2019).

Assuming 1% of diaspora remittances are invested in agriculture, this is \$250 million annually, larger than the supply of finance by MFBs or private equity. While currently fragmented, the willingness of educated working Nigerians in urban areas and the diaspora to invest is an opportunity with large potential. This needs solutions for pooling and managing investments, that could be provided by fintech solutions.

Whereas remittances traditionally are one-way donations of money to family and friends in the country of origin, there is a growing interest in diaspora investment. These are generally longer term two-way investments with an intended return on investment (JRC, 2021). Diaspora investments are less volatile compared to FDI, and are often first movers in a developing country due to their existing knowledge and networks (Inter-American Development Bank, 2012). Diaspora investment is often not just financial but combined with knowledge and expertise (JRC, 2021).

In a mechanism similar to diaspora investments, investment clubs in urban areas also build on the willingness of Nigerians to invest in business. While the total amount pooled in investment clubs and angel investors networks is much smaller compared to diaspora funds, there is more interest in investing in agribusiness. Larger investment clubs will have

Supply of Financing

a formalized investment funnel, whereas smaller clubs often invest in their members' personal networks. They are often educated young professionals looking to invest in their area of origin, and finance is combined with knowledge. As with diaspora investments, the informality and personal relationship between investor and investee is a strength.

Agricultural finance by diaspora and urban individuals			
Estimated current supply		Trend	
60 - 200 billion	₺	↑	+25% YoY
150 - 500 million	\$		
Common offerings		Risk and return	
Debt: long term >36 months		%	0-10% return per annum
Equity		⚠	non-productive assets
Donations			
Ticket size per transaction		Number of actors	
100,000 - 10 million	₺	📍	1 - 2 million diasporans
\$250 - \$25,000	\$	😊	1 - 2 million beneficiaries
Opportunities		Challenges	
Patient capital		Fragmented investments	
Relationship and knowledge		Unproductive investments	
Pooling investments with fintech			

Figure 35: Finance supply by remittances (sources: PWC, JRC, Agri-Logic)

Fintech and Agritech

World Bank distinguishes clusters of digital agricultural services, ranging from low connectivity technologies, through transitional technologies, to high connectivity for advanced technologies (Kim, Shah, Gaskell, Prasann, & Luthra, 2020) (Figure 36).

GSMA clusters digital agricultural solutions for developing countries into access to markets (digital procurement and e-commerce), access to assets (smart farming) and access to services (information, weather, finance) (GSMA, 2020).

Only a subgroup within these agritech services are considered fintech services, the World Bank theory of change for disruptive agricultural technologies (DATs) distinguishes access to credit, crop insurance, and crowd funding (Kim, Shah, Gaskell, Prasann, & Luthra, 2020).

In Nigeria, for several years, crowdfunding was the main fintech tool for agriculture. Many large and small crowdfunding platforms promised large returns by investing in farming. The more companies surfaced, the more concerns increased among the investing public on the regulation of crowd-funding platforms in Nigeria. Complaints of defaults when investments are due became almost a daily news item. (Business Day, 2021) (TechCabal, 2022)

Supply of Financing

In January 2021, the Security and Exchange Commission (SEC) issued regulations and guidelines for the conduct of crowdfunding business generally in Nigeria, not just agriculture. Within months after the SEC announcement, former crowdfunding platforms changed their business strategy or stopped operating entirely. (Business Day, 2021) The future of this sector is currently unclear.

Nigeria has a wide uptake of mobile payments but low use of innovative finance products: 44% of companies provide mobile payment to farmers and suppliers, signalling uptake of established fintech solutions. However, only 4 of the 18 companies (22%) that operate warehouses offer warehouse receipt finance, indicating low use of innovative finance solutions. (AgraMondis, 2021)

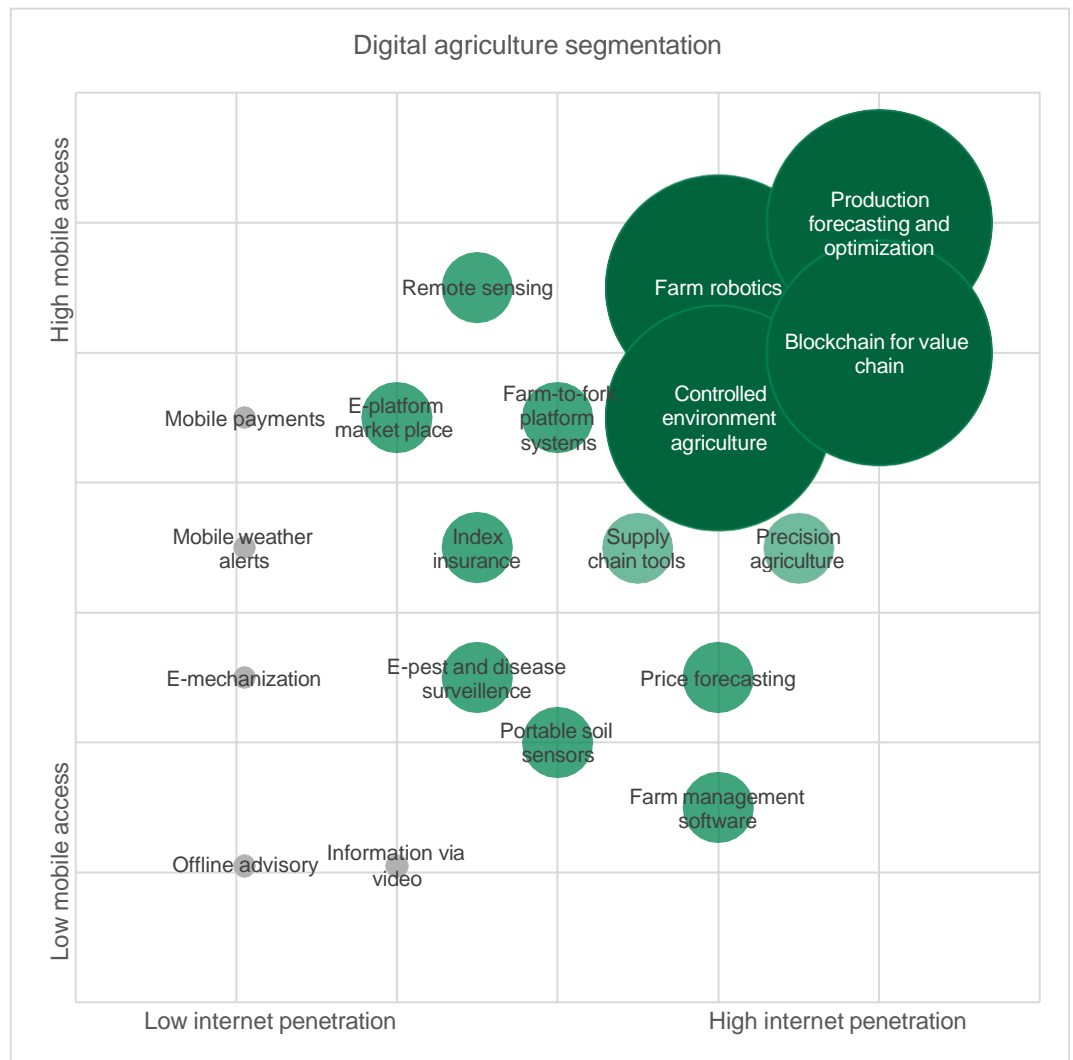


Figure 36: Segmentation of agritech solutions (sources: World Bank, Agri-Logic)

Supply of Financing

Fintech is not currently a significant source of financing for the sector, however with appropriate solutions, fintech could open up new sources of private equity, individual and diaspora investments, and value chain finance. Agritech could also be a risk management tool for banks and micro-finance banks, by collecting data on bankability and creditworthiness (profitability and repayment rates) as well as common sector risks (weather, pests, demand and pricing).

Whereas mobile money and mobile payments have a significant market share in other developing countries, they currently account for 3-5% of payments in Nigeria. In 2021, MTN and Airtel, the largest telecommunications providers in Nigeria, received approval to operate payment service banking. (Guardian Nigeria, 2021) This development is expected to grow the market share of mobile payments in Nigeria. It is unclear to what extent these mobile payments would likely be made between customers that are currently already using other bank payment channels, or whether it would have a significant reach with the population that currently does not use banks. If mobile banking indeed triggers a larger level of financial inclusion for smallholder farmers, this could potentially support aggregators in providing value chain finance.

Participants of the validation webinar suggest that risk management, market access and knowledge are the key areas of interest for fintech and agritech solutions (Figure 37).

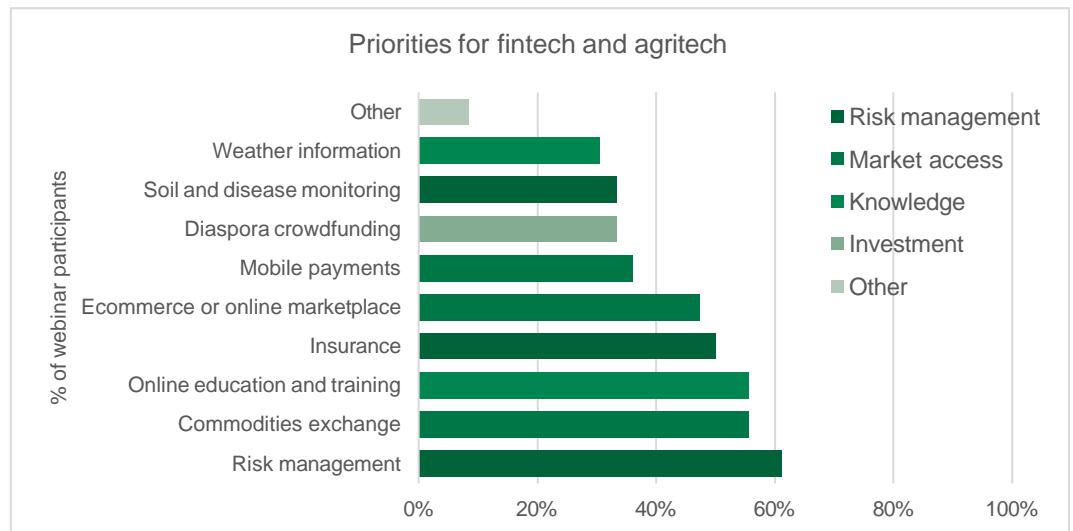


Figure 37: Priorities for fintech and agritech (source: Agri-Logic)

Agricultural
finance gap in
Nigeria:

₦76 trillion
\$183 billion

91% of demand

Financing Gap

Total gap

Based on a bottom-up estimation of demand (₦83 trillion, \$200 billion) and supply (₦7.6 trillion, \$18 billion), the financing gap for agricultural finance in Nigeria is ₦76 trillion (\$183 billion), roughly 90% of total demand for agricultural finance. Considering several parameters, the lower range of the estimated gap is ₦50 trillion (\$125 billion) and the upper range is ₦80 trillion (\$190 billion).

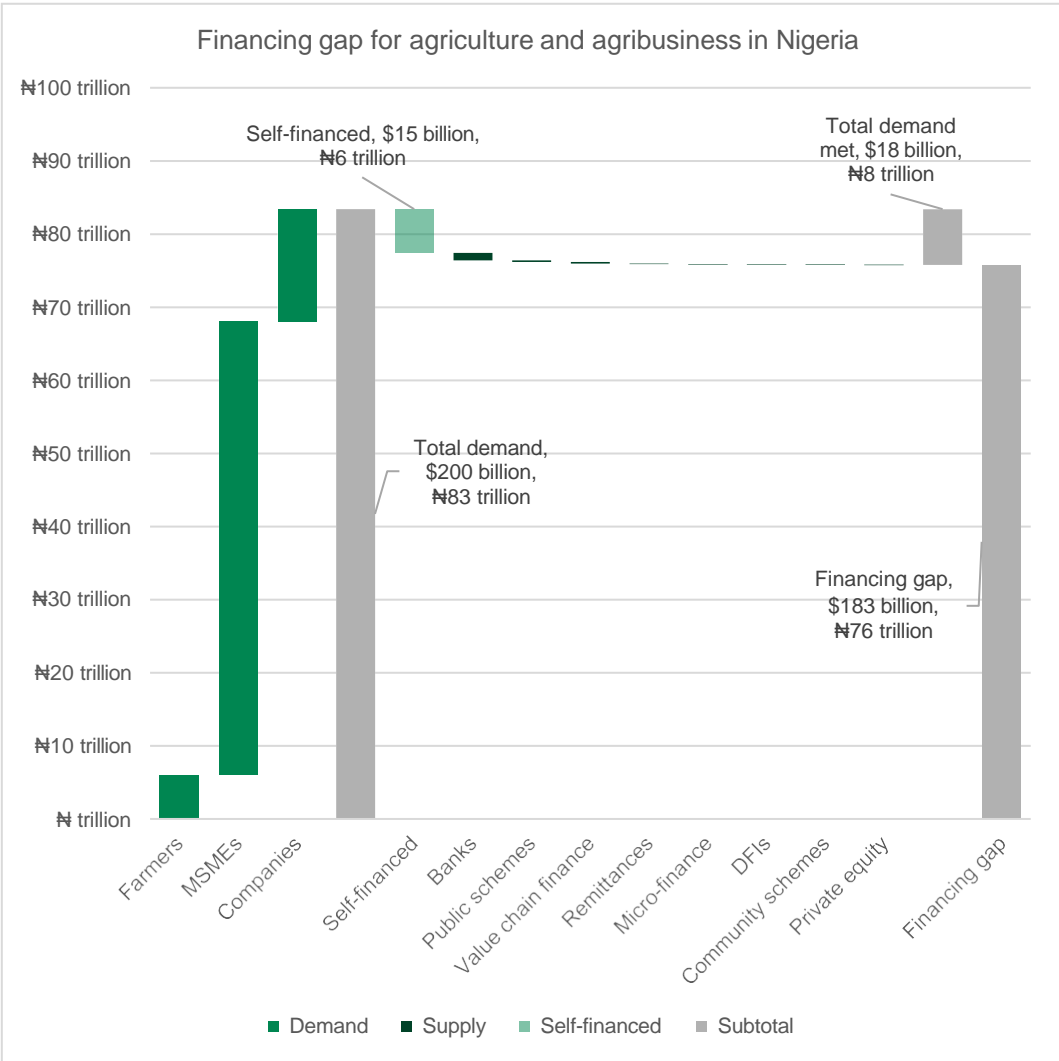


Figure 38: Financing gap (source: Agri-Logic)

As a benchmark, Dalberg estimated the annual financing demand for Sub-Saharan Africa at \$240 billion, and the gap at \$180 billion (75%) (Dalberg, KFW, 2018). Our current

estimate reveals a similar demand for agricultural finance for Nigeria alone, which can be explained by a combination of several factors: demand is increasing since 2018, difference in type of companies included in analysis, difference in exchange rate used (time and source), differences between active demand and passive need.

In comparison, the agricultural financing gap for The Netherlands is estimated between €73 million and €303 million, less than 2% of total demand for agriculture finance. Banks are the largest financiers of agriculture in The Netherlands, with an investment focus on assets and sustainability. The small financing gap in The Netherlands mainly exists for young farmers and for innovative investment cases. (FI-Compass, 2020)

Missing middle and missing more

SME lending is often called the missing middle. The missing middle is considered something specific to developing economies. (Lee, Small and Medium-Sized Enterprises and Transaction Sizes, 2022) In Nigeria, the financing gap is indeed largest for medium term and medium sized debt, revealing a missing middle. However, considering the very large finance gap for all instruments and transaction sizes, it should not be the only focus.

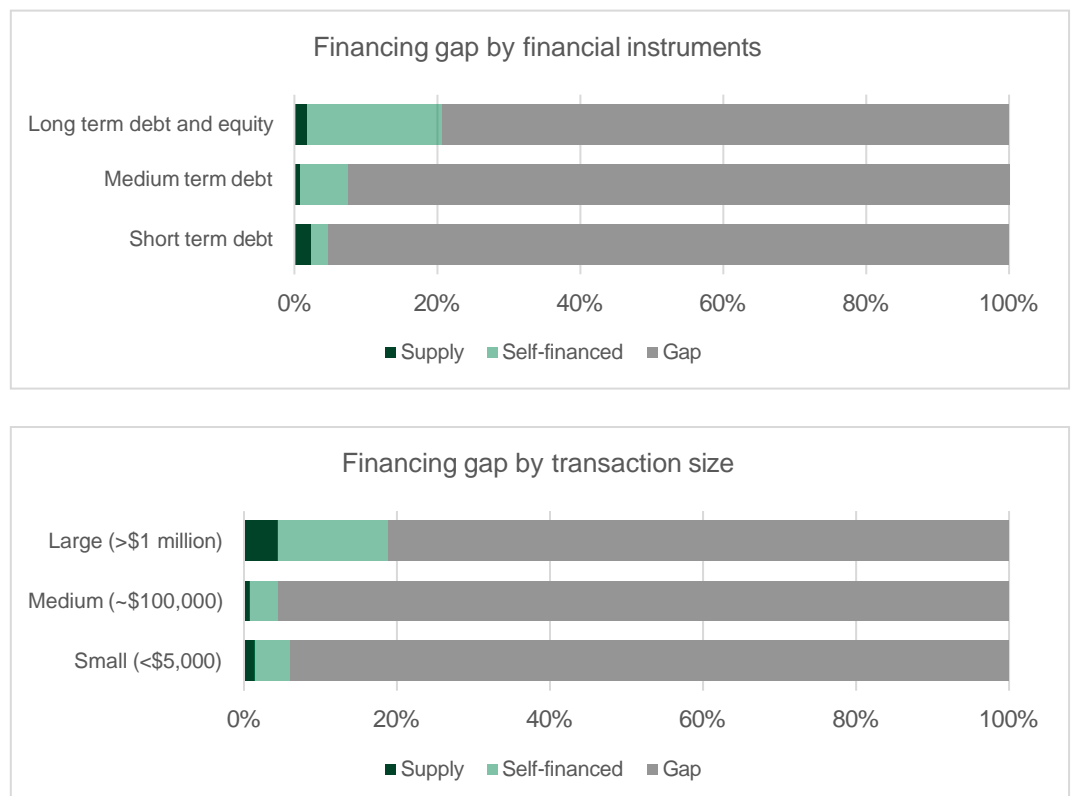


Figure 39: Financing gap by financial instrument and by size (source: Agri-Logic)

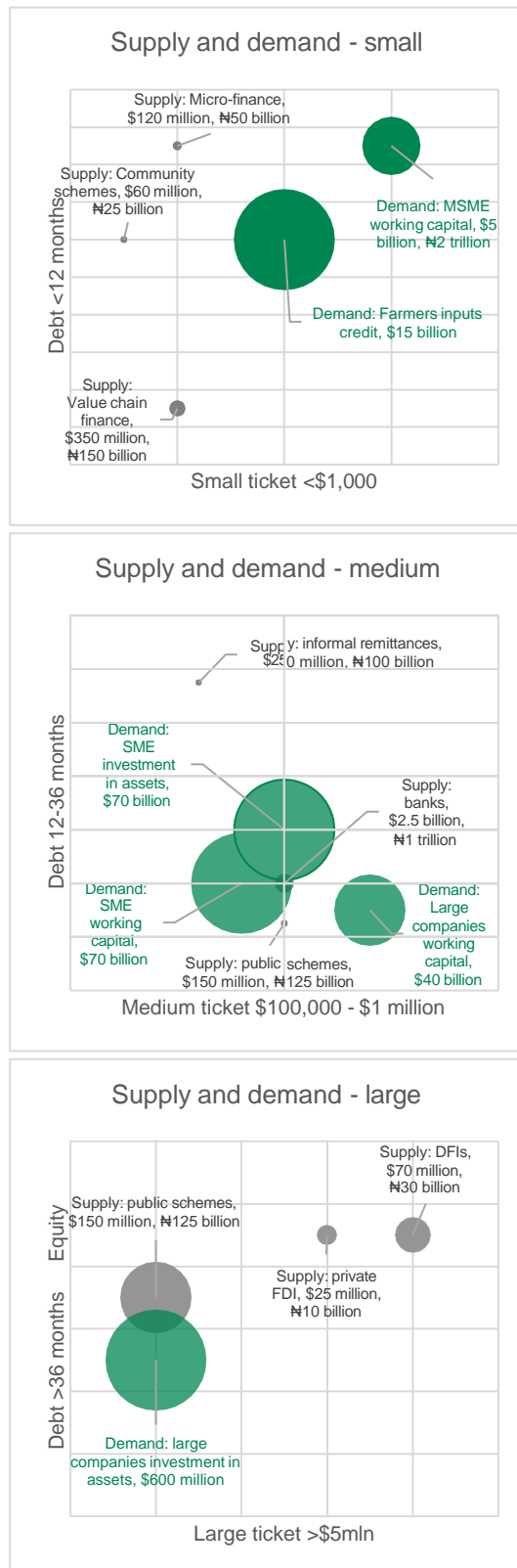


Figure 40: Supply and demand by ticket size (source: Agri-Logic)

Segmentation

Supply and demand can be segmented into small short term transactions, medium sized and medium term transactions, and large sized long term transactions (Figure 40).

Small short term transactions mainly address inputs credit needs of farmers and micro enterprises and have the duration of a crop cycle. These are serviced by value chain finance, micro finance and community schemes. The total demand exceeds supply. Value chain finance and community schemes are growing and scalable.

The largest demand is for medium ticket sizes for 12-36 months. These are mixed investment needs by SMEs for working capital and assets, as well as recurring working capital needs for large companies. Banks service the large companies and medium sized enterprises, whereas public funded schemes and informal transactions have some traction with small enterprises. This is where demand grows much faster than supply, and solutions are needed.

Large ticket sizes are generally investments in processing. Public funds play a large role in this segment, and private equity is growing. Some banks are also active in this segment. While total supply does not meet demand, this segment is the most favorable compared to other segments.

This is in line with MSMEs perceived ease of access to finance in our survey. Those looking to raise short term debt are much

more optimistic about their ability to raise funds compared to those looking for longer term debt or equity (Figure 42).

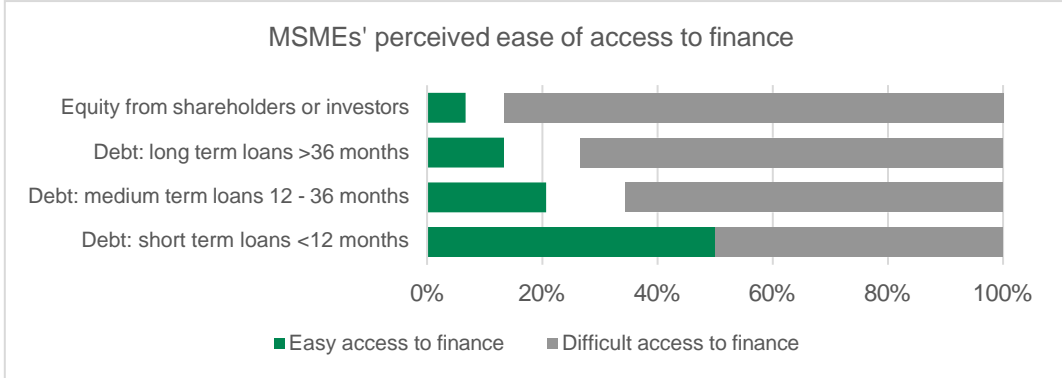


Figure 42: MSMEs' perceived ease of access to finance by tenor (source: Agri-Logic)

While supply of agricultural finance grows with an average 29% annually, compared to a demand growth of 15%, this is insufficient to catch up with the finance gap, which could have doubled by 2027. (Figure 43)

There are also needs and opportunities that are not included in current active demand for finance. These include innovative solutions for high-tech or large scale production, new business models to commercialize smallholder farmer through sharing, and value addition beyond primary processing. This would grow demand and increase the financing gap even further.

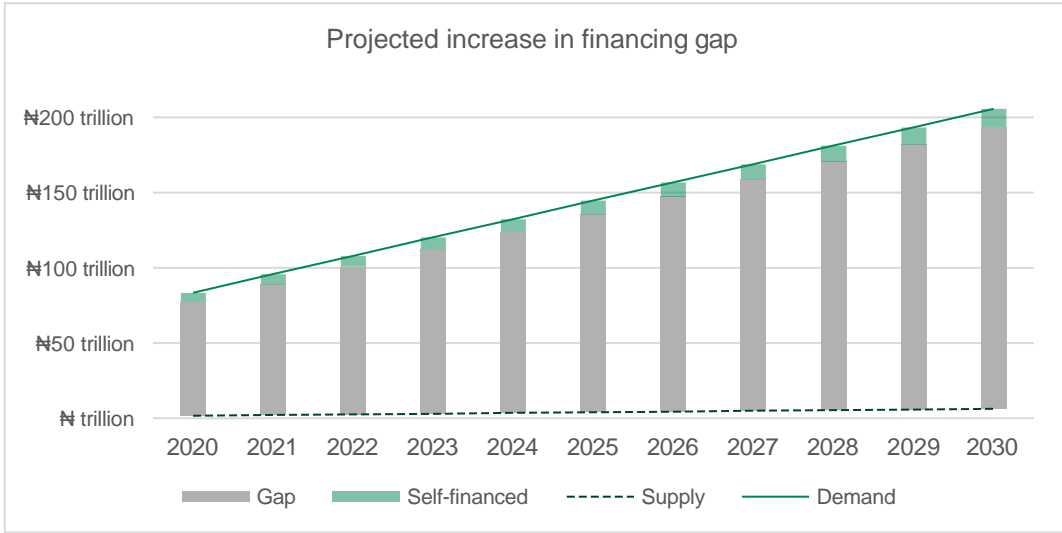


Figure 43: Forecasted demand, supply and gap (source: Agri-Logic)

Risk Mitigation

Weaknesses of the sector that underly the very large access to finance gap relate to collateral, knowledge and profitability. Stakeholders report corruption, policy and security as specific concerns for Nigeria. In addition, market volatility, weather and supply chain dependencies are risks that are common to agribusiness globally.

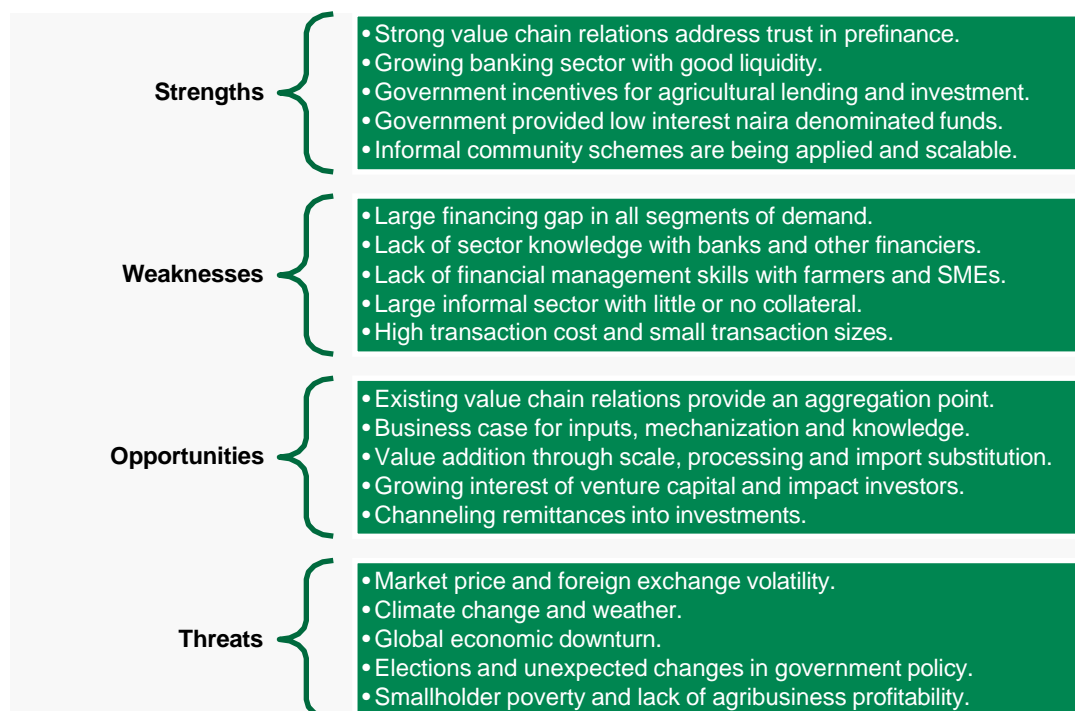


Figure 44: Summary of SWOT analysis (source: Agri-Logic)

Sector specific risks including *Collateral*, *Knowledge* and *Profitability* require research, training and appropriate business models for all actors including entrepreneurs, banks, public financing schemes. Some of these risks may be addressed through government policy and CBN bank regulation.

Risks related to doing business in Nigeria include *Corruption*, *Policy and Policy Consistency* and *Security*. In mitigating these risks, it's critical to recognize that Nigeria is a very diverse and large country, and there are differences between sectors, geographies and actors. Risk management and mitigation requires context specific insights.

Market and Exchange Rate Volatility, *Climate and Weather*, and *Supply Chain Dependencies* are risks that exist in agribusiness globally. Solutions exist in hedging, insurance and partnerships, and global best practices can be implemented and localized to the Nigerian agribusiness sector. These solutions also represent investment opportunities.

A summary of risks and mitigation strategies is provided in Figure 45.

Risk	Likelihood	Impact	Mitigation
Lack of collateral	H	H	<ul style="list-style-type: none"> • Warehouse receipt and invoices • Lease-to-own • Value chain finance • Creditworthiness data
Lack of agricultural knowledge (banks)	M	H	<ul style="list-style-type: none"> • Training • Sector analysis and insights • Dedicated agriculture desk • Investments in specialized funds
Lack of financial knowledge (MSMEs)	M	H	<ul style="list-style-type: none"> • Training • Technical assistance • Incubation programs • Learn through organic growth
Debt not a solution for poverty	H	H	<ul style="list-style-type: none"> • Savings in community schemes • Yield increase through inputs • Inputs credit in kind through chain • Income diversification
Specific activities need scale	M	L	<ul style="list-style-type: none"> • Lease or rental opportunities • Cooperatives • Plantations and processing • Employment not micro enterprise
Corruption	M	M	<ul style="list-style-type: none"> • Preparation and compliance • Patience • Business ethics training • Collective business action
Policy and policy consistency	H	M	<ul style="list-style-type: none"> • Contingency in budget • Forecasting in scenarios • Understand trends and insights • Form associations and platforms
Security	M	H	<ul style="list-style-type: none"> • National livestock transformation • Embed crop and livestock • Respect and engage community • Gather local security intelligence
Price and exchange rate volatility	H	L	<ul style="list-style-type: none"> • Gather sector knowledge • Build a safety net for incidental loss • Diversify to reduce shocks • Plan for foreign currency revenue
Climate and weather impact	M	M	<ul style="list-style-type: none"> • Gather sector knowledge • Build a safety net for incidental loss • Diversify to reduce shocks • Insurance and index insurance
Supply chain dependencies	M	L	<ul style="list-style-type: none"> • Insource what is critical • Keep inputs and parts in stock • Multi-party agreements • Address weaknesses in portfolio

Figure 45: Summary of risks and mitigation (source: Agri-Logic)

Collateral

Collateral is a challenge for both demand and supply. Banks due to regulations are not allowed or able to provide loans without collateral, and in a largely informal sector collateral is often unavailable. In addition, there is a narrow interpretation of collateral, with only real estate in urban centers commonly accepted. While inventory or equipment may have value, these are not considered accessible or sufficiently current in case of a loan default.

Family inheritance is the most common means of farm acquisition, and only 11% of male-owned farm land and 4% of female-owned farm land has formal land titles (NBS, 2019). In our sample, land titles are somewhat more common (34% of farmers). However, banks report a difficulty in verifying land titles and still rarely accept agricultural land as collateral.

80% of farmers and 92% of MSMEs would be able to provide some form of collateral, but mechanisms should be developed for warehouse receipt systems, invoice discounting, and lease-to-own of equipment and vehicles.

Even without collateral, aggregators could enable value chain finance for working capital, and could collect bankability data based on trade relationships.

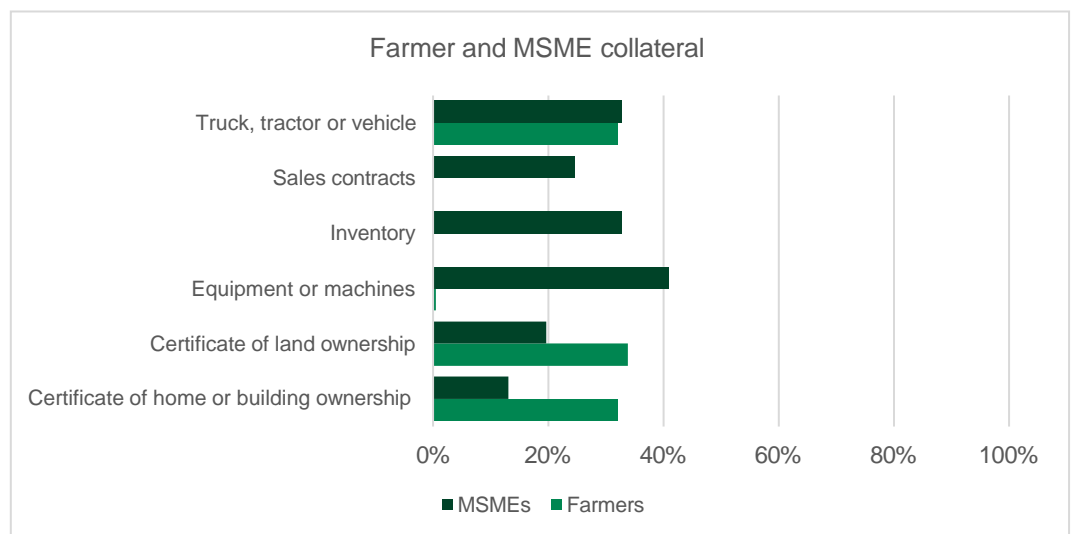


Figure 46: Available collateral for farmers and MSMEs (source: Agri-Logic)

Knowledge

Lack of knowledge is also a challenge both in supply and demand. Banks and investors report lack of understanding of the agriculture sector and of SME lending as causes for lack of portfolio growth. In practice this may mean banks approve bad debt and reject opportunities.

On the demand side, many entrepreneurs lack financial and business skills, which means they are unable to communicate with banks about their financial needs, and often also do not optimize their profitability and bankability.

Knowledge needs to be developed for investors and entrepreneurs. This starts from appointing a dedicated expert, who needs to have access to training and sector insights. Entrepreneurs can learn by doing, or participate in technical assistance or incubation programmes.

Learning takes time, and investors may decide to invest through an aggregator, or indirectly into a dedicated third party fund to speed up portfolio growth.

Profitability

Lack of profitability is a major challenge for farmers and MSMEs. For suppliers of finance, this is a risk of non-repayment if investees are not sufficiently profitable. For farmers and micro entrepreneurs, debt especially at high interest rates may make their livelihoods worse instead of better.

A smallholder household survey in 2017 found that for lower-income families in Nigeria, household income usually surpasses expenses, while households with higher income needs struggle to meet them. 73% of smallholder households live in poverty, below \$2.50 per day. (Figure 47) (CGAP, 2017)

A 2020 survey of farmers in Northern Nigeria indicated that just 13% of farmers is comfortably above the national poverty line, the remaining 87% of farmers hovers around the poverty line or earns below (AFEX, 2021). Livelihoods are better with diversified farms, and with smaller households (Figure 48).

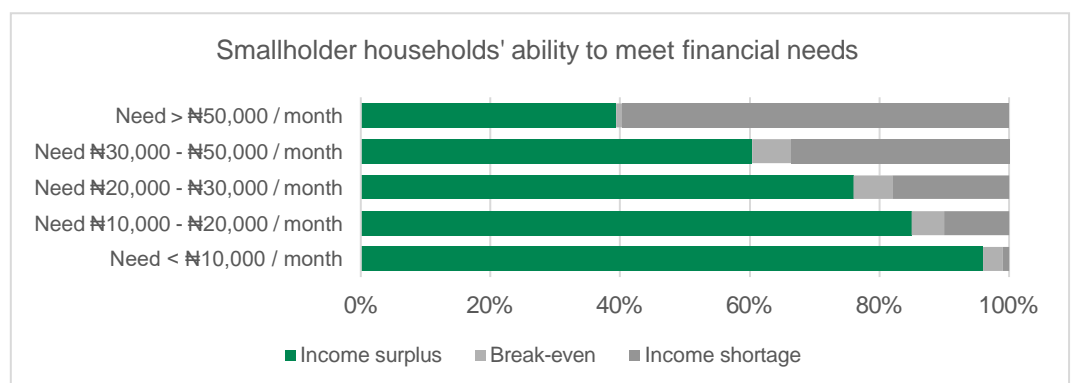


Figure 47: Smallholder households' ability to meet financial needs (source: CGAP)

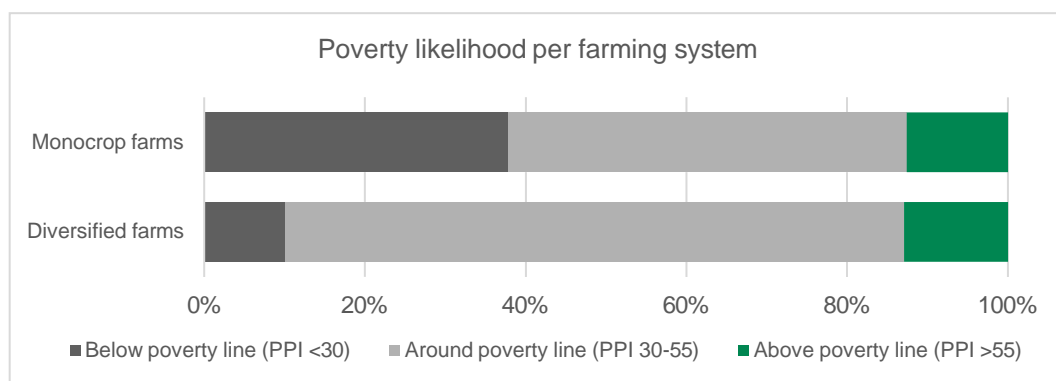


Figure 48: Poverty likelihood per farming system in 2020 (sources: AFEX, Agri-Logic)

For farmers and micro entrepreneurs living in poverty, informal community savings schemes can provide an alternative, allowing people to invest in productivity or diversification without the burden of debt. For those value chains that have a business case for productivity increase through inputs, value chain finance can make inputs available in kind with repayment in commodity upon harvest. This can be done through an aggregator or in a tripartite agreement between farmer, financier and buyer.

Smallholder farmers are a key to ending hunger and undernutrition worldwide, but they are increasingly facing barriers to profitability. Smallholders are not a homogenous group. While some smallholders should be supported to move up to commercially oriented and profitable farming systems, some should be supported to move out to seek non-farm employment opportunities. (Fan & Rue, 2020)

In the coffee sector, it was found that out of nine African coffee origins, only two had the potential to provide profitable livelihoods for smallholder farmers. A combination of larger farms (>4ha), farm diversification for resilience, and price premium for high quality would allow Cote d'Ivoire and Ethiopia alone to develop a coffee sector that is profitable for all. Small monocrop farms in bulk commodities markets are simply not economically viable. (Agri-Logic, 2016)

Profitability is the largest challenge for farms that are very small and focus on a single staple crop. The development policy of The Netherlands distinguishes three segments of smallholder farmers: farmers who can scale up commercially ('stepping up'), farmers who can find employment outside of agriculture ('stepping out'), and those who are subsistence farmers ('hanging in') (Minister voor Buitenlandse Handel en Ontwikkelingssamenwerking, 2018). Smallholder farming can be commercialized ('stepping up') through shared use of assets via leasing constructions or cooperative ownership. As a benchmark, in The Netherlands, most farmers earn additional income from processing, considering that many

processors are cooperatives owned by their producing members (FI-Compass, 2020). A segment of farmers ('stepping out') could be better off as workers in employment of plantations and processors, and access to finance can create these opportunities. Subsistence farmers ('hanging in') are not an addressable segment for formal access to finance, but could benefit from informal savings schemes.

Corruption

Nigeria ranks 154 out of 180 in the Corruption Perception Index (Transparency International, 2021). A majority of Nigerians say the level of corruption in the country has increased and the government is doing a poor job of fighting it (AfroBarometer, 2020).

In order to find a solution, we need a more nuanced understanding of how this affects investments as well as doing business in the real sector.

Director-General of the World Trade Organization Ngozi Okonjo-Iweala is globally recognized as anti-corruption fighter. (Guardian Nigeria, 2019) (BBC, 2018) During her term as finance minister, she has put in place several measures to control corruption: public procurement law does not allow cash payments, all payments are made via the treasury single account for central transparency, and all bank accounts that receive payments are verified with a Bank Verification Number to allow traceability.

While many are skeptical, the combination of these measures means that it has gotten much more difficult than it used to be to channel government funds to personal accounts, as it requires a formal and approved contracting entity. It has also improved transparency and traceability, so any transaction can eventually be linked to the final beneficiary. Corruption now has a greater risk of being exposed by political enemies, and this appears to have reduced the ease of corruption and making it less widespread. The system of controls does rely heavily on those in charge.

Several respondents indicate that as part of loan approval by public bodies, an expense to a government appointed consultant of supplier had to be included in the total budget, under the suggestion the loan would not otherwise get approved. Amounts reported are between 0-10% of total funds.

Based on our analysis and expert input, we estimate that 80-90% of government investments into agriculture are actually disbursed to their beneficiaries. While this is still a concern, it also has to be acknowledged that government is one of the larger investors in the sector.

Our respondents present a mixed view on the possibility to conduct business without bribes. Some respondents believe that it is not possible. In some settings, bribes are almost formalized. Others however report that with thorough documentation, timely application and patience, licenses are issued without the need to pay bribes. Bribes requested for business transactions with government rarely exceed 5%. The answer appears to depend on the ethical values of the entrepreneur, their business skills, preparation, and level of haste or despair. There are also differences between states and types of public entities.

While individual businesses may not be able to make a change, collective action by businesses to enforce norms can make a difference. Successful community institutions for collective action have existed for at least a millennium. Stanford economic historian Avner Greif analyzed a community of Jewish traders in north Africa in the 11th century that sustained honest contracting in long-distance trade among its members through a system of norms and punishments. (Basu, 2015)

Policy and Policy Consistency

Respondents addressed two concerns about policy. Regulation of trade and exchange rate is attracting criticism on its appropriateness and impact, as described in section *Policy and Legislation*. Furthermore, policy consistency is a concern, with new rules generally introduced with short notice and often unexpected by sector stakeholders.

This requires investors and companies to build contingency into their budgeting and forecasts, and monitor developments. Stakeholder associations and sector platforms have shown some results in public dialogues and policy direction.

Security

Security experts identify five main security risks in Nigeria: jihadism, clashes between herders and farmers, banditry and kidnapping, separatist insurgency, and oil militants. (BBC, 2021)

One of these risks directly relates to agriculture: clashes between herders and farmers. This is a centuries old conflict between sedentary farmers and nomadic herdsman. Several factors have aggravated this decades-long conflict arising from environmental degradation in the far north and encroachment upon grazing grounds in the middle belt: militia attacks; the poor government response to distress calls and failure to punish past perpetrators; and new laws banning open grazing in some states. Government has developed the National Livestock Transformation Plan, which involves the establishment of dedicated grazing reserves. (International Crisis Group, 2018)

Examples of partnerships that contribute to a solution exist. 2SCALE has built a model with grazing reserves, milk collection to a central processing facility, and opportunities for fodder production for farmers in the area. (2SCALE, 2022) A model that considers social and economic needs of an entire community can reduce conflict.

The other security risks are not directly related to agribusiness, but do affect farmers and companies through a general security risk. Kidnappings are more prevalent in rural areas and along rural roads, and do affect security of farmers, buyers and other stakeholders. Farmer and MSME survey respondents indicate a mixed picture (Figure 49). This is in line with a diverse reality: security and social challenges are more prominent in specific areas and not the same throughout the country, and local intelligence is key.

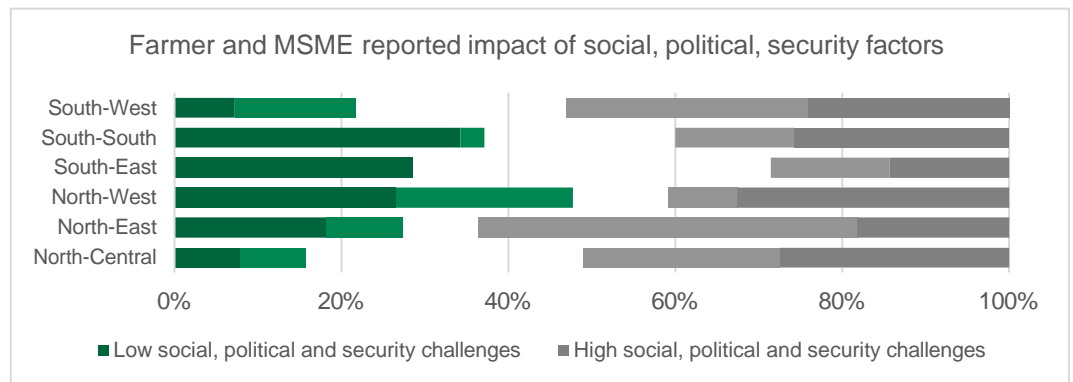


Figure 49: Severity of social, political and security challenges (source: Agri-Logic)

Market and Exchange Rate Volatility

Market price volatility is inherent to any commodities sector with limited product differentiation. It's stronger in sectors that are purely driven by supply and demand, and in sectors with an imbalance in negotiation power between producers and buyers. Survey respondents indicated higher volatility in cash crops compared to staple and food crops (Figure 50).

Farmers, entrepreneurs and investors are advised to gather thorough sector knowledge to understand added value, the range of price volatility, and price drivers. This will allow to understand and plan for sector specific risks. Having a safety net for shocks is recommended, and for those who can't afford a shock, diversification is a strategy.

Exchange rate volatility mainly affects those who invest in foreign currency, or buy imported assets and inputs against a foreign currency equivalent cost. The risk is larger for long term investments and for foreign investors.

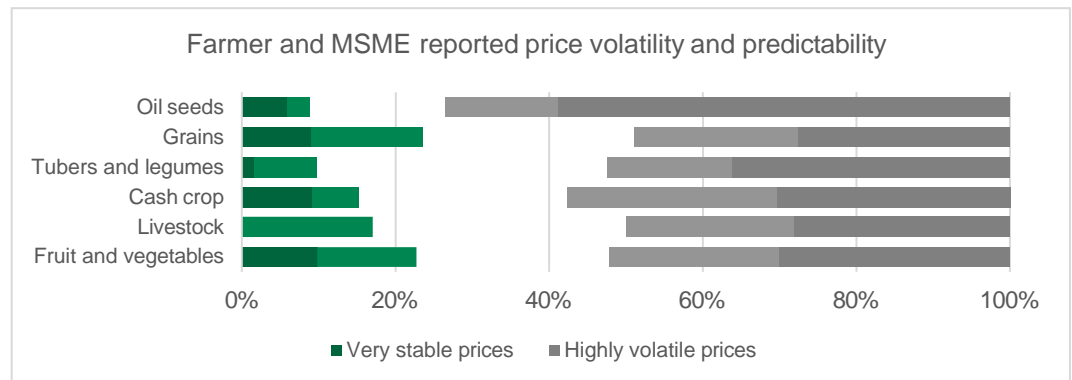


Figure 50: Volatility and predictability of prices (source: Agri-Logic)

For those investing in foreign currency, higher rates of return in naira are required to realize an acceptable rate of return on foreign currency. It is recommended to also secure a revenue stream that is linked to the same foreign currency to offset this risk. This could be through export, or by operating in markets where naira prices generally follow foreign currency (for example in cocoa or grains, global supply and demand markets set the dollar price, and local prices in naira generally follow the international trend).

Climate and Weather

Weather and climate are risks inherent to agribusiness. Farmers are more affected compared to MSMEs (Figure 51). 30% of smallholders indicate that pests and plant diseases pose the greatest risk to their agricultural activities. (CGAP, 2017)

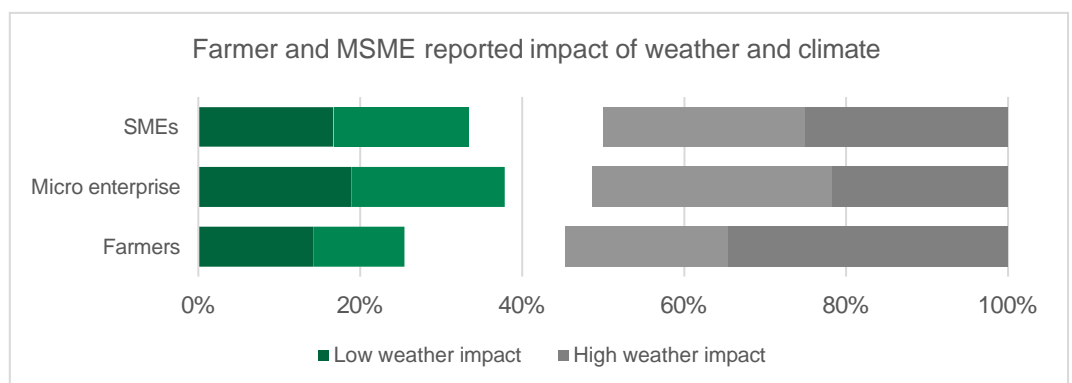


Figure 51: Impact of weather and climate (source: Agri-Logic)

Farmers, entrepreneurs and investors are advised to gather thorough sector knowledge to understand good agricultural practices, climate impact and adaptation strategies. This will allow to understand and plan for sector specific risks. Similar to managing market and

exchange rate volatility, resilience is critical. Resilience can take the form of a safety net, or diversification.

Insurance products are being introduced to the market, also for agricultural risks. They are not yet available to everyone, but are several aggregators providing value chain finance use insurance to cover the risk for the group and their individual members, and narratives of small and medium companies benefitting from insurance exist. 16% of MSMEs in our survey report they have insurance, this is more common for larger SMEs. (Figure 52)

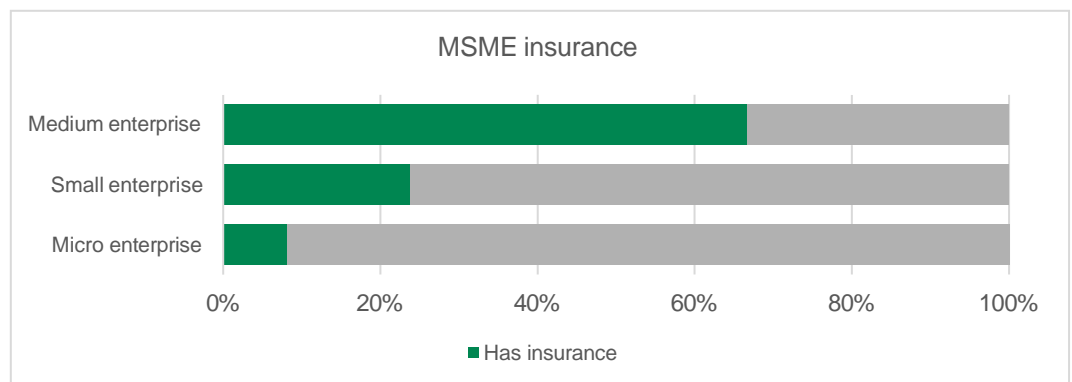


Figure 52: MSMEs with insurance (source: Agri-Logic)

World Bank is currently promoting index insurance as a solution to protect smallholders from climate impact and disaster. Index insurance is a relatively new but innovative approach to insurance provision that pays out benefits on the basis of a predetermined index (e.g. rainfall level, seismic activity, livestock mortality rates) for loss of assets and investments, primarily working capital, resulting from weather and catastrophic events, without requiring the traditional services of insurance claims assessors. It also allows for the claims settlement process to be quicker and more objective. (Global Index Insurance Facility, 2020)

In Nigeria, NIRSAL started developing an index insurance product in 2018 (New Stage, 2018), and other public private partnerships have followed (Business Day, 2022). Viability of these insurance products and adoption by farmers and value chain aggregators is still unclear.

Supply Chain Dependencies

For individual companies, their dependency on suppliers, logistics companies and buyers is a counterparty risk, especially in a developing environment with often few specialized actors, or many very small actors, in each domain.

For example, perishable products will not find a market without a reliable cold chain. Cost of logistics changing without notice can remove profit margins in commodities chains.

Dependencies need to be considered in business strategy, and viable solutions should be found by insourcing critical activities, keeping inputs and spare parts in stock, or through contracts between multiple parties. For entrepreneurs as well as investors, current weaknesses in supply chains also provide an opportunity for impact and profit.

Solutions and Best Practices

To entrepreneurs, *Organic Self-Financed Growth* is the most reliable way to success. Start small, build traction, and reinvest your earning in business growth. *Do Not Overlook Public Institutions*, they are one of the current largest suppliers of finance, and the only party addressing the medium sized and medium term loans.

A *Value Chain Approach* is critical to success for entrepreneurs, investors and development professionals.

For innovators and investors, *Leveraging and Pooling Investments*, combined with *Data and Technology* and *De-Risking and Blended Finance* can open up a very significant pool of diaspora remittances, individual and institutional pension investments, and foreign direct investment. This can have a significant new business opportunity, contribution to GDP, livelihoods and food security.

For development professionals and donors, *Informal and Community-Based Schemes* can be an entry point for the least bankable smallholder farmers and micro entrepreneurs providing savings-based solutions for resilience and livelihoods. *De-Risking and Blended Finance* can kickstart finance supply from commercial banks and value chain finance, which could become scalable if collateral risk is addressed. Developing *Proof of Concept for Innovative Business Model* is an approach commonly used in renewable energy and other sectors, which can create synergies and boost innovation to increase productivity and value, and reduce waste.

For entrepreneurs, innovators and investors, sector knowledge, a safety net through savings or insurance, diversification and partnerships are the key elements for *Risk Mitigation*.

Organic Self-Financed Growth

Organic growth through self-financing and informal financing is the most common strategy for SMEs in agribusiness. While it tempers speed of growth, it is a proven method of starting small and growing incrementally. Self-financing allows SMEs to learn and optimize their business model, tapping into formal access to finance after years.

Organic growth and persistence

"I am a graduate in analytical chemistry, but I prefer to be a farmer and trader. I am from the East, have a farm in the North, and trade in the South of Nigeria. In the East, we help each other with investments if we can afford it."

“When I started my tomato farm, I started very small with just two cans of seeds.” The farm is now 20 hectares large and uses irrigation to spread harvest throughout the year. “I also traded tomatoes through Mile 12 Market and Agege Market in Lagos. I identified an opportunity to invest in plastic crates for rental.” The crates protect the tomatoes during transit significantly reducing waste, which benefits both the seller and the buyer. They are more expensive than the raffia baskets, but can be used for up to three years.

“I obtained a business loan from NIRSAL to invest in the crates. I was invited to an interview panel to explain my application. It was a business idea nobody had heard of at that time, and they asked me many questions.” Once convinced of the business case, the panel asked why not buying more crates and increase the loan. “I said, my father always told me I should never borrow more than what is in my account so I am always able to pay back. That’s when the panel approved the application.”

The funds were released into an account in the company name with NIRSAL, all crates were paid from that account. “The conditions are favorable: an interest rate of 5% and repayments starting from the second year.” The repayment period was eventually extended because of COVID. Repayment is currently ongoing. “I am very confident I can pay back. The rental price has even increased and I am earning good revenue.”

“Last year, I also got a personal loan from Zenith Bank. I used that account for my crate rental business, it was in my personal name.” The loan of ₦500,000 was approved based on the consistent income they saw in the account. “I asked if they could also give a larger loan, but this was not possible without two guarantors or property as collateral.” Interest rate is 24%, and monthly repayments start from the second month. “These conditions would not work in agribusiness, it takes at least 3 months to be profitable.”

“Meanwhile I am reinvesting the earnings from my existing businesses into new projects. I am starting a piggery in Ibadan.”

Chris Ugo, Cee Perfect Global Supplies Limited

Figure 53: Case study: Cee Perfect: organic growth and persistence

Do Not Overlook Public Institutions

While public institutions are much criticized with a perception of inefficiency and corruption, they do have funds to disburse at favorable rates, and currently these are the main parties supplying finance for medium to long term in medium sized transactions. Public institutions are the second largest supplier of finance in agriculture, and 20-25% of farmers and SMEs has been able to obtain financing through public schemes.

Do not overlook public financing schemes

“My partner is a lecturer and had attended a training from NIRSAL. We wanted to expand our business into processing palm kernel oil for food manufacturers and palm kernel cake for the animal feed industry. Writing the proposal was not difficult.” The only requirements were the business plan and a certificate of incorporation.

“I never expected to get the loan. We did not even know anyone in their office. After some months the application was approved but my partner had not even checked his email.”

The approved amount was 65% of the amount that was applied for. The money was paid directly to the suppliers who built the machines and supplied services, and the company is responsible for repayment of the loan. “The loan has 5% interest, and we have a 6 months grace period. I am not worried about being able to pay back the loan, we can earn the monthly installment in just one week.”

There are some risks. The factory cannot operate on generator so there needs to be electricity on the grid. We also need to collect sufficient raw materials from villages around us. “There are many buyers, processors come from Ibadan to buy our products.” The company is already saving up for the repayment of the loan. “We do not want to be a bad debtor. Without NIRSAL we would not have been able to start this business.”

Olajide Jemiseye, technical partner, MJ Oloko Globa Services

Figure 54: Case study: MJ Oloko Globa Services: do not overlook public schemes

Value Chain Approach

Any agribusiness is only as strong as its weakest link. For example, agribusiness with strong financing and market demand can still not operate without security of timely and quality supply. 93% of Nigerian agribusiness leaders indicates that supply chain excellence is important to business success (AgraMondis, 2021).

Any entrepreneur or investor should consider dependencies in their business plan. A ‘make or buy’ framework can be used to assess dependencies and decide how to address them. The level of control required over an activity is a function of strategic importance to customers, and supply risk. (Agriprofs, 2021) (Figure 55)

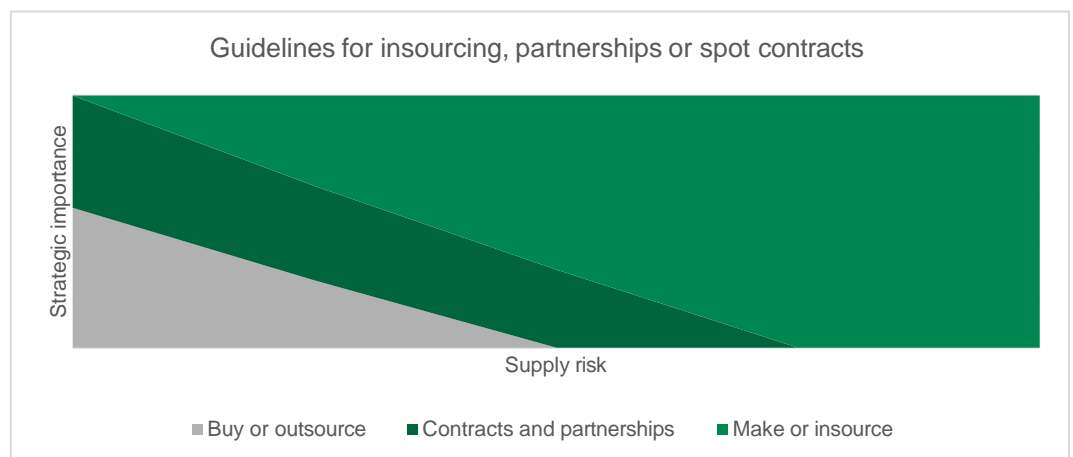


Figure 55: Insourcing, partnerships or spot contracts (source: Agriprofs)

Leveraging and Pooling Investments

With a large audience of Nigerians in cities and diaspora looking to invest for their retirement, either directly or through asset managers, there is an opportunity for entrepreneurs. This could be by leveraging direct connections by investing in a family member of personal connection, as well as the development of other investment schemes that create trust and pool together contributions to meet a larger demand and opportunity for investment, in line with regulations.

Innovative entrepreneurs use social media and fintech to open up these investment opportunities. Informal schemes depend on the credibility of their management (Figure 56), whereas larger opportunities exist in fintech (Figure 57).

Connecting diaspora to agricultural land

The company built relationships with traditional land owners in Ogun state, and saw an opportunity to connect this to demand from urban residents and diaspora for land. “We formally started our company two years ago. I started alongside employment but resigned when I saw this opportunity. Since we started, we keep developing our business model.” Currently, the company is an intermediary for purchase of land, and works with a team of surveyors, lawyers and farmers.

“Our leverage is social media, we continue to advertise our services, and make sure we customize to our customers’ needs.” Trust is critical to the success of fundraising, the company is formally registered, and shares transparently on social media and with customers. “Customers have their own choice. Once they invest in the land, some start their own farm, some will build houses, and some will keep it idle. In several cases we farm cassava, maize or oil palm for the customers based on a revenue sharing mechanism.”

“We learned that the majority of our market is in the diaspora, about 85% of land buyers are based in the US, UK, Italy and Spain. We also have several customers in Lagos. Most clients are in their 30s and 40s, and are investing for their retirement.” The company has big ambitions to start a large plantation and get into processing. Raising investment from diaspora and urban residents is a strategy the company would pursue. “Borrowing from a bank should be the last resort as a business person.”

Joy Akintan, Afrifarm

Figure 56: Case study: Afrifarm: connecting diaspora to agricultural land

Data and Technology for Untapped Finance

Smart technology solution can pool individual investors (Figure 57), and data can de-risk for private equity, banks or other investors. A thorough understanding of risk and incentives is key to building a profitable business case for investor and investee. Fintech and

Solutions and Best Practices

knowledge solutions can boost value chain finance, bank and private investments, and pool diaspora remittances into the agricultural sector.

Market centric and data driven solutions

A lack of working capital is often a barrier to scale. Farmers can increase yields if they are able to buy appropriate seeds, fertilizer and other inputs. Processors also need working capital to secure raw materials and optimize utilization. AFEX facilitates this access to capital on both the demand and the supply side. “We wanted to make it easier for farmers and processors to access working capital.”

On the supply side, AFEX initially worked with micro-finance banks to provide credit for inputs to farmers. “The micro-finance banks had liquidity and a clear business case could be made for access to input finance, but the passbook and paper system was not scalable after we reached 10,000 farmers.” On the demand side, a lot of work needed to be done to unlock credit in the face of standard collateral requirements. “We spent one year flying between Abuja and Lagos to negotiate credit with banks for processors. Banks had strict collateral policies and did not trust our warehouse receipt system. Eventually, we got three deals approved, but then we realized that every new tranche of credit was a completely new credit application while the fundamentals of the transaction had not changed.”

“Running into the limits of the financial system, we had to and still have to create the future.” AFEX now consists of three different entities. The trading entity provides market access, aggregation and logistics to farmers. The commodities exchange matches supply and demand and transforms commodities into investable assets. The investment arm functions as an investment bank and connects investable funds to supply chain opportunities. “We had to turn commodities into financial products that were similar to what asset managers are familiar with. Following this insight, we created secured instruments that have included commercial papers and bonds. The instruments have received A ratings from two different agencies.” Common investors are fund and asset managers that need to diversify from treasury bills and government bonds in order to beat inflation. “Our ambition is to get pension funds on board, as this is a large potential pool of funds to invest in commodities.”

Currently, total assets under management at AFEX amounts to ₦80 billion (~\$200 million). ComX, which exists as a web platform and mobile application and was launched by AFEX in 2020, is the channel through which a large number of individuals are able to put even modest amounts of investment capital into commodity backed financial instruments or spot commodities. “ComX is the do-it-yourself portal to commodities investment, and our financial instruments are regulated by the Securities and Exchange Commission (SEC), giving investors a lot of security about their choice to invest on the platform.” “AFEX investment will get a CBN license as a finance house for simple lending. Typical borrowers are also our customers on the exchange, including large poultry farms, rice mills and traders. Through our trading entity, we also provide inputs on credit to almost 200,000 smallholder farmers.” With this in place, processors will, for example, be able to borrow working capital worth 3-6 months of commodities procurement. They can also satisfy their order requirements on the exchange, where there is sufficient volume that meets their quality standards.

“Beyond our current activities, the sector needs longer-term capital.” Investments in large scale production and value addition through processing require patient capital. “We need to grow food production by 5% each year to keep up with population growth. We believe that larger agricultural estates are the solution. This is the future for us.”

Ayodeji Balogun, AFEX

Figure 57: Case study: AFEX: market centric and data driven solutions

Informal and Community-Based Schemes

Savings presents an opportunity to increase both agricultural sustainability and financial inclusion for the least financially included farmers and micro entrepreneurs. Smallholders recognize saving in financial institutions or at home as important for various reasons, including to mitigate agricultural risks. (CGAP, 2017)

Informal and community-based schemes can address lack of trust. When groups are formed on a community level, members are often friends and will hold each other accountable for contributions and repayment. A case study of VSLAs supported by a large Nigerian cocoa trader confirms that groups up to 20 farmers can benefit from VSLAs with a more diversified income and improved livelihoods (Figure 58).

In addition to their direct impact, anecdotal evidence from Ghana suggests that these informal schemes can also form the foundation to generate data on creditworthiness and unlock commercial access to finance from Micro Finance Banks or others (Figure 59).

Community savings schemes can facilitate investments in diversification

There is a need to invest in productivity and income diversification for farmers, in order to improve livelihoods and resilience. Rural communities generally do not have access to financial services. “A trip to a bank in a nearby town can cost more than the value of the intended deposit or withdrawal.”

Ofi builds on ongoing sustainability programs with cocoa farmers in South-West and South-South Nigeria by introducing Village Savings and Loans Associations. “In our experience it is critical that communities build their VSLAs from the ground up.” The Ofi Nigeria sustainability teams introduce the concept of VSLAs in communities, and when groups are formed provide training in management of meetings, process for elections of the management committee, and mandate. The company supports in liaising with banks to open a group bank account, but does not have access to the bank or records. Groups are encouraged to formally register with the Corporate Affairs Commission as a cooperative.

Once operational, all group members contribute a monthly amount to the savings account. Each month, a group member can take out a portion of the savings or take a loan. Loans are for a period of 3 months, and interest is charged at 10% per annum.

Many group members use the savings to invest in additional income generating activities.

Trust is critical to the success of a VSLA: “Twenty members is the optimal size for a VSLA in our experience. We promote single gender groups, which allow for equal participation of all group members. We started with female only groups, and have recently introduced male VSLAs as well.” VSLAs are able to kickstart access to finance and impact livelihoods: “We have observed positive impact since VSLAs were introduced into the Nigeria cocoa sustainability program in 2020: group members are actively diversifying and increasing their income, partner banks are impressed by the consistency of savings, and we see that group members also become more vocal in their community and at the executive level of their farmer groups.”

The model also has benefits from the company. “VSLAs are a wonderful entry point for introduction of income diversification and entrepreneurship.” Sustainable livelihoods of farmers in the supply chain are a priority for the company. “I believe VSLAs are a scalable solution to inclusive finance.”

Jennifer Abuah, Ofi

Figure 58: Case study: Ofi: Community savings schemes facilitate diversification

VSLAs can generate data that unlocks formal access to finance

Access to smallholder finance was an important part of the recently concluded second phase of the Cocoa Rehabilitation and Intensification Programme (CORIP II) in Ghana.

While the program initially aimed to raise impact finance for SME service providers, the lack of track record of these starting companies motivated a change of strategy for the implementers. Instead, VSLAs were formed in cocoa farming communities, allowing the farmers to pay for services and invest in their farms. “We used informal community financing to generate data about savings behavior and credit worthiness. Repayment rates for internal VSLA loans were 100%, and this unlocked formal access to finance through Micro Finance Banks and Savings and Loans Companies.” For loans provided by the financial institutions the repayment rates are 95-99%, better than average in the sector.

While Solidaridad has concluded the CORIP program, most of the VSLAs are still active, and 4 financial institutions continue to provide loans to these farmer groups. The organization has now partnered with several traders and other financial institutions to replicate and scale the model.

Hammond Mensah, Solidaridad West Africa

Figure 59: Case study: Solidaridad: VSLAs generate data that unlocks formal finance

Participants of the validation webinar are optimistic about the scalability of informal community schemes (Figure 60). While these schemes need startup support from public actors, development professionals or value chain aggregators, they have no disadvantages for participating smallholders and micro enterprises.

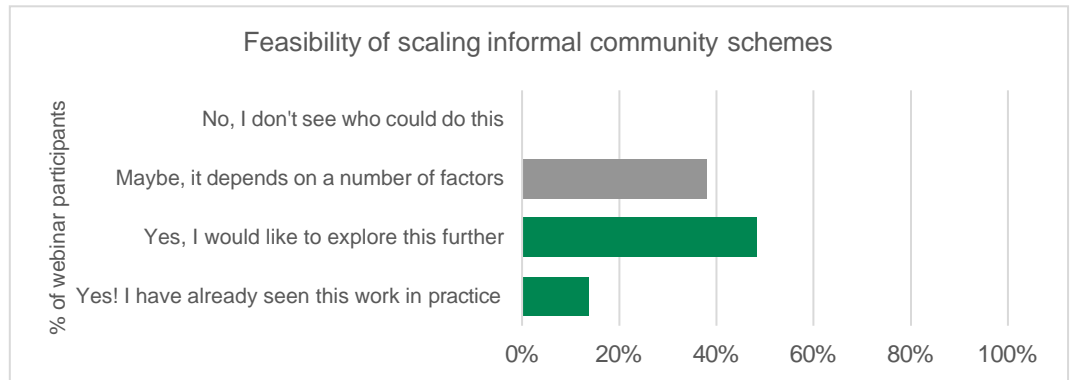


Figure 60: Feasibility of scaling informal schemes (source: Agri-Logic)

De-Risking and Blended Finance

There is a steady growth in blended finance. Sub-Saharan Africa continues to be the region most frequently targeted by blended finance transactions, but with deal sizes remaining small relative to other regions. (Convergence, 2019)

Common blended finance structures can include: funds provided on below-market terms to lower overall cost of capital, credit enhancement through guarantees or insurance, a grant-funded technical assistance facility to strengthen viability and impact, or grant funding for transaction design or preparation. Funds represent the largest share of blended finance deals. (Convergence, 2019)

Aceli Africa is one of the large initiatives on blended finance, operating in East Africa. The model works with a first loss protection combined with origination incentives and impact bonuses for commercial banks extending financing to SMEs. Aceli also builds capacity for both lenders and SMEs to bridge the financing gap. (Aceli, 2020) Learnings in East Africa show that impact of blended finance through a combination of de-risking and incentives has positive impact on first-time borrowers, farm workers, gender inclusiveness and access to markets, but confirm a difficulty to mobilize private sector investment (Aceli, 2021). Blended finance is a vehicle to kickstart innovation in agricultural value chains and in financial markets that generates more value compared to development aid.

Proof of Concept for Innovative Business Models

Innovation remains difficult to finance, while it is specifically important for solving current weaknesses in value chains. This also occurs in developed economies, in The Netherlands a financing gap also exists for innovative agricultural solutions (FI-Compass, 2020).

Innovation hubs can play an important role in supporting entrepreneurs and small businesses by providing spaces that enable them launch their ideas, scale their

Solutions and Best Practices

companies, and network with a community of like-minded individuals. Africa has 1031 active innovation hubs, of which 164 are in Nigeria. (Briter, 2021)

To identify best practices to access finance for innovation, we looked at the renewable energy sector (Figure 61). A proof of concept is required before solutions become commercially viable, bankable and scalable. Technical support or subsidy to develop such a proof of concept can be used to kickstart a development and roll out innovations.

Feasibility study and pilot projects for proof of concept

Rocky Mountain Institute (RMI) works to transform global energy systems through market-driven solutions to secure a clean, prosperous, zero-carbon future for all. “Fundamentally, people need and deserve access to clean, reliable, and affordable power, and historical approaches to energy systems will not enable sustainable economic development for Africa economies in the 21st century and beyond.”

In developing economies, such as Nigeria, stimulating the productive use of electricity in rural communities, especially in agricultural value chains can help maximize the impact of rural electricity access and ensure it is translated into better livelihoods. “Electrifying agricultural activities in rural communities can generate win-win situations for agricultural value chain actors, energy system developers, and the communities they inhabit. But these actors rarely engage with one another and developing solutions requires first understanding these actors’ needs.”

In collaboration with the Nigeria Power Sector Program (NPSP), RMI developed an in-depth feasibility study to identify which opportunities for agricultural productive uses make sense to electrify immediately in Nigeria, and which will require additional support to develop. This study found that electrifying cassava grating, rice milling and flour milling with a renewable powered mini-grid enables rural processing businesses to save on operating costs, and can even increase revenue when interventions are coupled with improved processing technologies.

Building on these findings, and in collaboration with the Rural Electrification Agency (REA), the Energizing Agriculture Program (EAP) is bringing energy and agriculture sector actors together to grow productive uses of electricity in rural communities in Nigeria.

“One way it will do so is through a project-focused accelerator that provides grant funding and capacity building to identify, test, and scale commercially viable agriculture-energy solutions and business models.” The goal is to develop a proof of concept for these innovative solutions and generate data about the business case and return on investment. This can ultimately equip commercial players to invest in scaling proven technologies and business models throughout mini-grid communities. The Innovation Accelerator will kick off in May 2022 and will run for the next two years.

Scarlett Santana, Rocky Mountain Institute

Figure 61: Case study: RMI: Feasibility study and pilot projects for proof of concept

Opportunity and Impact

Key Findings

Sector characteristics

Agriculture and agribusiness are widely recognized as being critical for development. The sector in Nigeria is characterized by:

- Production of *Crops, Livestock and Aquaculture*, with staples for domestic processing and consumption; and cash crops for export value.
- *Smallholder Farming* with many subsistence farmers and often low productivity. Commercial farmers are less than half of the farmer population.
- A largely *Informal Economy and Entrepreneurship*: SMEs are significantly contributing to GDP, yet often not registered and with limited scalability.
- *Policy and Legislation* is often focused on incentivizing domestic production and self-sufficiency, often by trade regulation for import or limiting access to foreign currency.
- With a growing population, challenges in infrastructure, and trade barriers, the country has high and increasing *Food Prices and Self-Sufficiency* is not yet in sight.

Demand for financing

The total demand for agricultural finance is estimated at ₦83 trillion (\$200 billion). Demand for financing roughly falls into 3 categories: *Farmers* short term finance for inputs, *MSMEs* medium to long term finance for assets and overheads, and *Large and Multinational Companies* short term working capital and long term investment in productive assets.

Challenges in access to inputs for farmers exist mainly in affordability and quality of application. Inputs finance should be accompanied by technical assistance to ensure impact on productivity and profitability. MSMEs are largely self-funded, and mainly struggle with their medium to long term needs that do not match available funding in the market. Large companies investing in trade and processing provide opportunities if risks in supply chain dependencies and foreign exchange can be mitigated.

Supply of financing

The total supply of agricultural finance is estimated ₦1.6 trillion (\$4 billion), with an additional ₦6 trillion (\$15 billion) self-financed by entrepreneurs. *Banks, Public Finance Schemes* and *Value Chain Finance*, represent the largest sources of finance.

Banks are the largest provider of agricultural finance in Nigeria, even though agriculture only represents ~5% of their total loan portfolio. Bank funds for agriculture grow ~35% annually. Nigerian banks generally have liquidity, but stakeholders have reported collateral

requirements, lack of knowledge, currency and market risks, and lack of a rural branch network as challenges.

Public schemes by CBN and others are a significant source of funds for agriculture and agribusiness, and are the largest actor that is facilitating inputs credit to farmers and providing medium term finance to SMEs. These funds however do struggle with low repayment rates and as such have limited scalability.

Value chain finance is disseminated through traders or processors as an aggregator, and while there is a strong business case to build on commercial relationships, aggregators are not always willing and able to scale considering that financial services are not part of their core business capability.

Informal Community Schemes represent a much smaller amount of agricultural financing, but due to their accessibility, low risk, and small scale can reach a much larger number of farmers and community SMEs.

Financing Gap

Based on a bottom-up estimation of demand (₦83 trillion, \$200 billion) and supply (₦7.6 trillion, \$18 billion), the financing gap for agricultural finance in Nigeria is ₦76 trillion (\$183 billion), roughly 90% of total demand for agricultural finance. Considering several parameters, the lower range of the estimated gap is ₦50 trillion (\$125 billion) and the upper range is ₦80 trillion (\$190 billion).

The financing gap is largest for medium term and medium sized debt, revealing a missing middle. However, considering the very large finance gap for all financial instruments and transaction sizes, the missing middle should not be the only focus.

While supply of agricultural finance grows with an average 29% annually, compared to a demand growth of 15%, this is insufficient to catch up with the finance gap, which could have doubled by 2027.

Risks, solutions and best practices

To entrepreneurs, *Organic Self-Financed Growth* is the most reliable way to success. *Do Not Overlook Public Institutions*, they are one of the current largest suppliers of finance, and the only party addressing the medium sized and medium term loans. A *Value Chain Approach* is critical to success for entrepreneurs, investors and development professionals.

For innovators and investors, *Leveraging and Pooling Investments*, combined with *Data and Technology* and *De-Risking and Blended Finance* can open up a pool of diaspora remittances, individual and institutional pension investments, and foreign direct investment.

For development professionals and donors, *Informal and Community-Based Schemes* can be an entry point for the least bankable smallholder farmers and micro entrepreneurs. *De-Risking and Blended Finance* can kickstart finance supply from commercial banks and value chain finance, which could become scalable if collateral risk is addressed.

Weaknesses of the sector that underly the very large access to finance gap relate to collateral, knowledge and profitability. Stakeholders report corruption, policy and security as specific concerns for Nigeria. In addition, market volatility, weather and supply chain dependencies are risks that are common to agribusiness globally. For entrepreneurs, innovators and investors, sector knowledge, a safety net through savings or insurance, diversification and partnerships are the key elements for *Risk Mitigation*.

Way Forward, Returns and Impact

This report, and specifically the chapters on *Risk Mitigation* and *Solutions and Best Practices* provide guidance for entrepreneurs, investors and development professionals looking to address the access to finance gap.

The segmentation of demand and supply for small tickets, medium tickets and large tickets (Figure 40) provides insight into the solutions that are most scalable. The authors call on all stakeholders to focus on the most scalable and impactful solutions in each segment:

- *Informal Community Schemes* are the most appropriate solution for a large segment of smallholder farmers, and can be scaled through public and private extension services. This can also be a solution for MSME services such as aggregators or inputs dealers on community level.
- *Value Chain Finance* builds on existing commercial structures to reach commercially viable smallholder farmers, and needs alternative collateral solutions, de-risking, and data to become scalable. This could potentially be achieved in partnership with MFBS who leverage fintech.
- *Banks* have liquidity, interest and incentive to invest in agribusiness, and combined knowledge and tools for agribusiness and SME investing can support the growth of this segment. Funds as an indirect investment vehicle could also provide a solution for those banks who are not able to build agribusiness expertise.
- *Fintech and Agritech* can reduce risks and reduce transaction cost through data and targeted solutions. By developing solutions that appeal to asset managers, pension funds, investment clubs and diaspora, fintech offer the opportunity to tap into sources of funding not currently accessible for agribusiness.

Participants of the validation webinar confirm that collateral requirements and lack of sector knowledge are currently the key factors limiting scalability of bank credit to agribusiness (Figure 62).

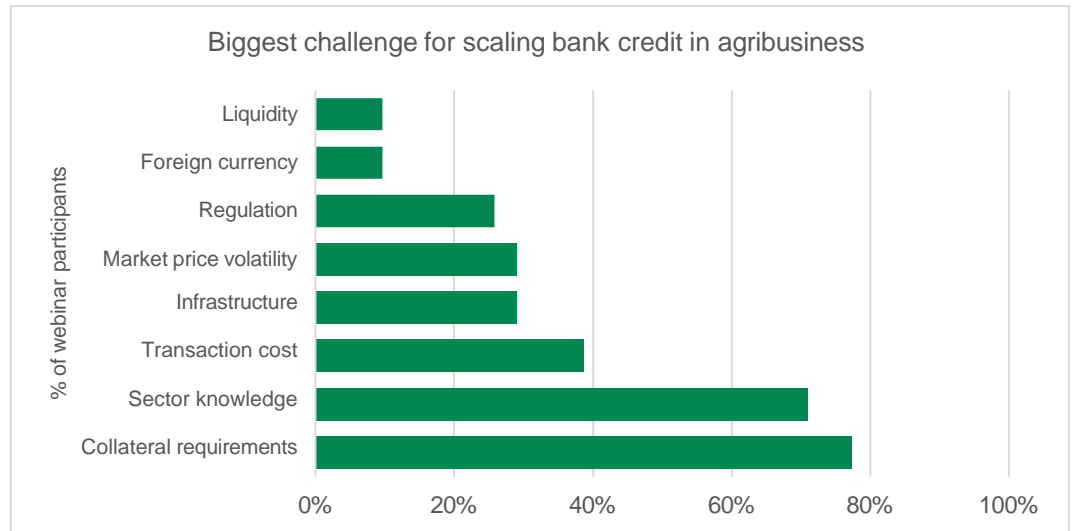


Figure 62: Challenges of scaling bank credit (source: Agri-Logic)

For *Private Equity* and *Development Finance Institutions*, indirect investments in value chain finance, banks or agritech offer a growth opportunity providing liquidity to the priority segments listed above.

While these combined interventions can generate an additional supply of finance of ₦30 trillion (\$73 billion) by 2030, this is insufficient to close the finance gap fully. (Figure 63)

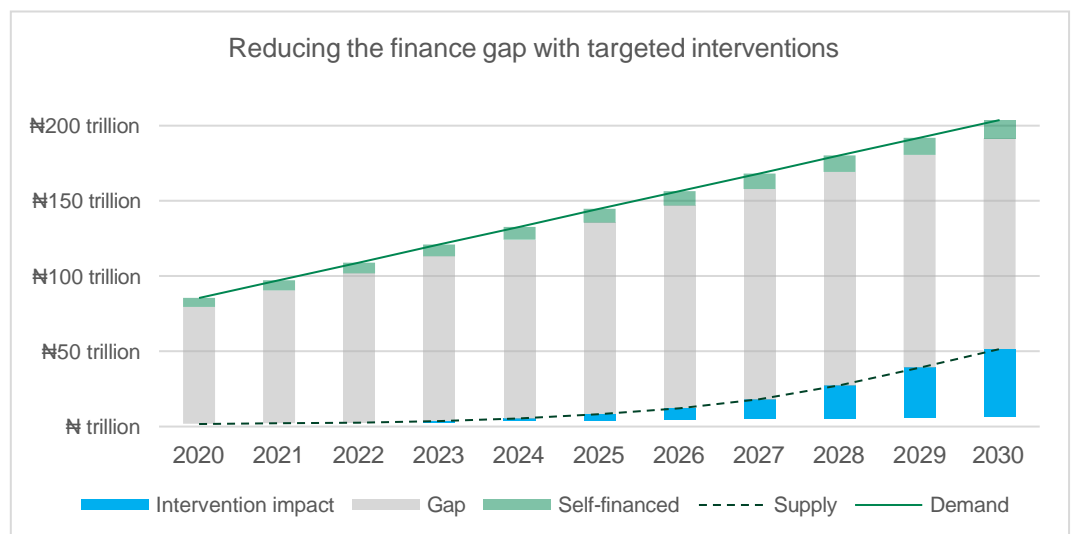


Figure 63: Reducing the finance gap with targeted interventions (source: Agri-Logic)

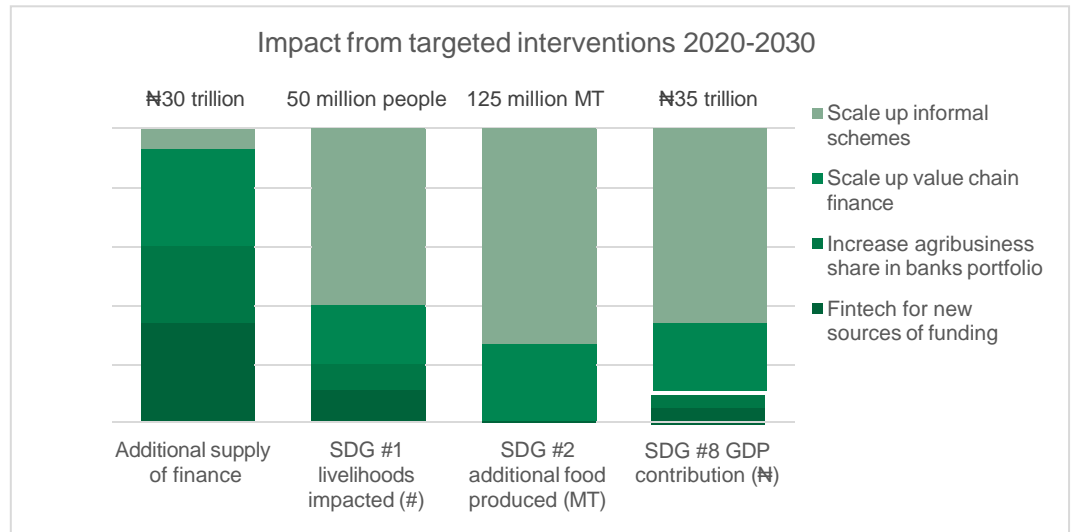


Figure 64: Impact from targeted access to finance interventions (source: Agri-Logic)

These combined interventions can generate an additional supply of finance of ₦30 trillion (\$73 billion) by 2030, improve livelihoods for 50 million people, enable production of an additional 125 million MT of food, and contribute ₦35 trillion to GDP. Banks and fintech have the potential to contribute the largest supply of financing to the sector, whereas informal schemes and value chain finance can have the largest impact on livelihoods and food security. (Figure 64)

Recommendations to the Embassy

Specifically for the Embassy of the Kingdom of The Netherlands, we recommend three pathways to contribute to reducing the finance gap.

1. In all development programs managed or sponsored by the Netherlands government, Informal Community Schemes including VSLAs and ROSCAs can provide a safety net and provide access to capital for investments in farming or diversification for farmers and their households in rural communities.
2. Mobilization of Dutch and international DFIs, publicly funded impact investors and public private partnerships to find solutions to de-risk value chain finance through alternative solutions for collateral, de-risking through data or blended finance with guarantees.
3. An agri-innovation incubator as a new development program, combining technical assistance in the development of a proof of concept and viable business model, with seed grants and support in raising commercial investment. This could boost innovation in value addition, mechanization, logistics and agritech.

Thank you to all contributors!

Authors

Agri-Logic operates where agricultural production, development, international trade and consumer markets intersect. We combine a thorough understanding of farm level reality and commodity trade with scientific research skills and a track record in sustainability strategy design and implementation, to help clients deal with sustainability challenges and market requirements. We are comfortable with data and with people.

We extend a warm word of thanks to all people who contributed to this study with their input, interview, documents and advice.



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Appendices

Methodology and Survey Demographics

Methodology

While the report aims to identify the status of access to agricultural finance across sectors, the value chain, and states in Nigeria, we focused on those most relevant to the objectives and most relevant to bilateral relations between the Netherlands and Nigeria:

- Focus regions: FCT, Kano, Kaduna, Lagos, Ogun, Oyo and Edo.
- Focus sectors: horticulture, dairy/poultry, cocoa/ginger, grains, oil palm.
- Focus activities: farming, logistics, processing, energy, technology and infrastructure.
- Focus demographics: formal and informal sector, MSME and SMEs.

Data has been collected from various sources:

- A. Desk research, sources include but are not limited to:
 - a. Agri-Logic data and literature review
 - b. Scoping and baseline studies of existing partnerships
 - c. Any references and documents provided by EKN
- B. Interviews with experts
 - a. International development finance institutions
 - b. NGOs, PPPs, implementing partners for development projects
 - c. Nigerian government organizations
- C. Survey of finance providers
 - a. Banks and MFIs
 - b. Cooperatives, agro-enterprises and traders
 - c. Fintech and insurance services
- D. Survey of companies seeking finance
 - a. MSMEs (farmers and processors)
 - b. SMEs (processors, agri-inputs and services/tech)
 - c. Corporates (processors, agri-inputs and services/tech)

Sampling

Surveys were developed for three different target groups: farmers (n=225), SMEs (n=61) and financiers (n=12). Expert interviews were semi-structured. Farmers have been surveyed in person by a team of enumerators in focus regions and focus crops. Other surveys were conducted online. (Figure 65)

The response rate for financiers was low, and considering the small sample size we have not used the survey data in this report. Insights from banks, investors and other financiers have been collected based on additional expert interviews and through representation in the validation webinar.

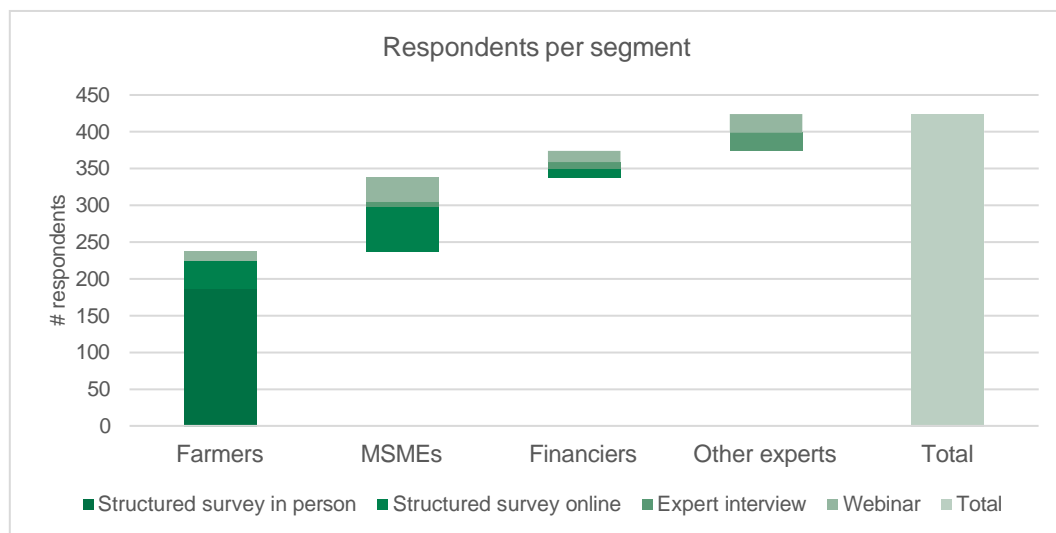


Figure 65: Survey, interview and webinar response rates (source: Agri-Logic)

Sampling focus has been on South-West and North-West Nigeria in line with the priority scope of the research (Figure 66). All regions are represented but results may be less specific for other areas of Nigeria. In addition to broadly cultivated crops like cereals and tubers, sampling has specifically focused on horticulture, oil palm, livestock and cash crops for export (Figure 67). Crop and sector characteristics are included in the analysis.

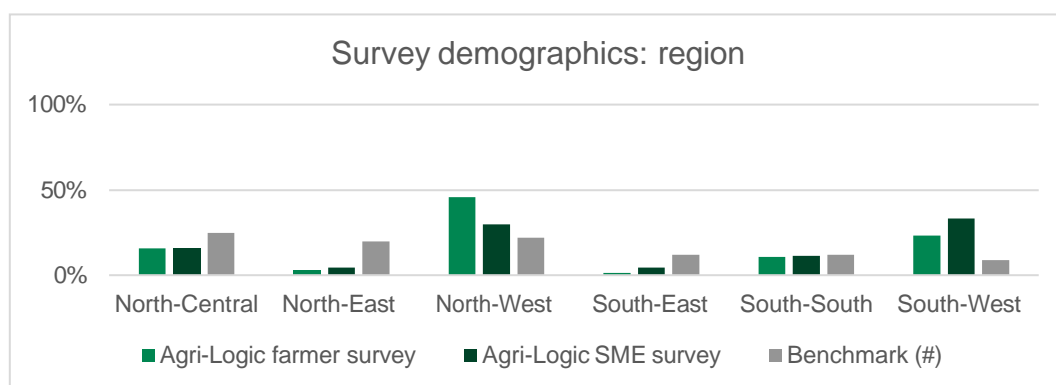


Figure 66: Survey demographics – region (sources: Agri-Logic, CGAP)

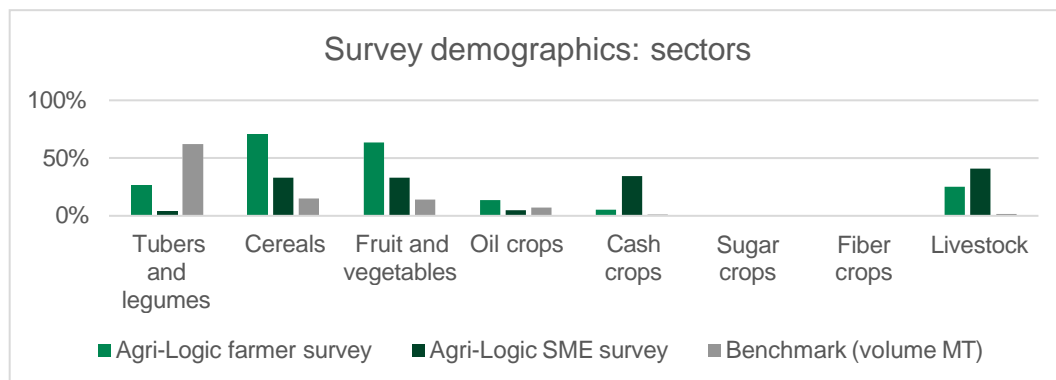


Figure 67: Survey demographics – sectors (sources: Agri-Logic, FAO)

Considering our small sample size, demographics have been compared to benchmark values from national household surveys. The sample is representative in sex (Figure 68) and age (Figure 69). Respondents are higher educated than average (Figure 70).

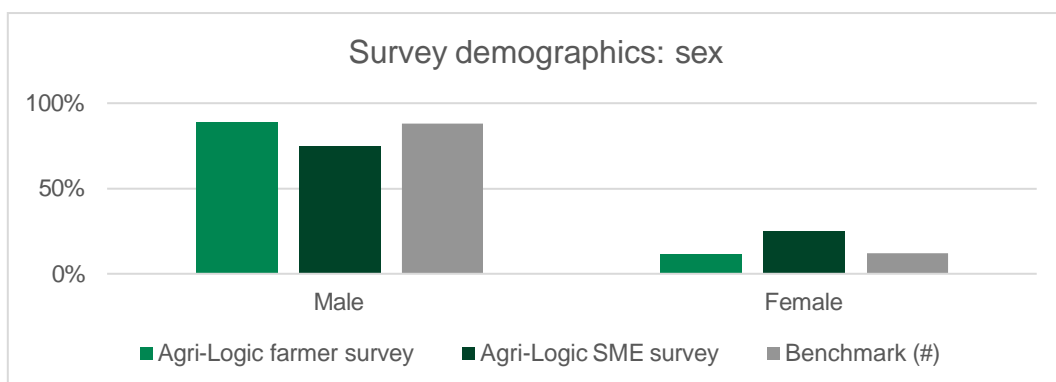


Figure 68: Survey demographics – sex (sources: Agri-Logic, CGAP)

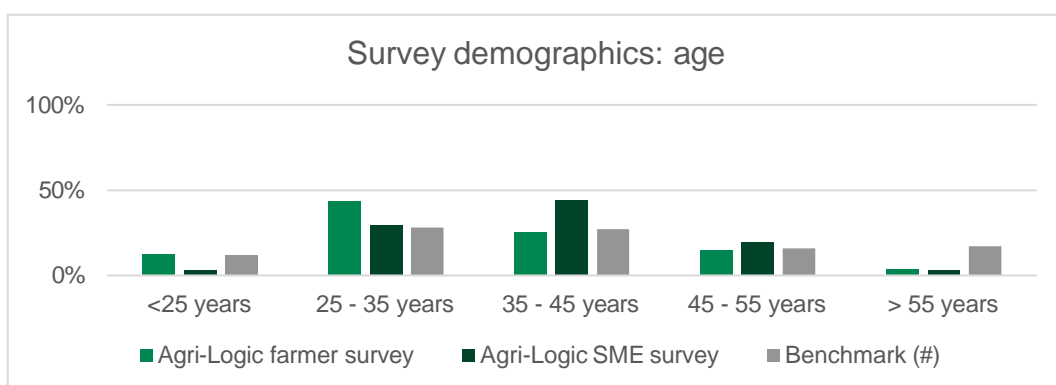


Figure 69: Survey demographics – age (sources: Agri-Logic, CGAP)

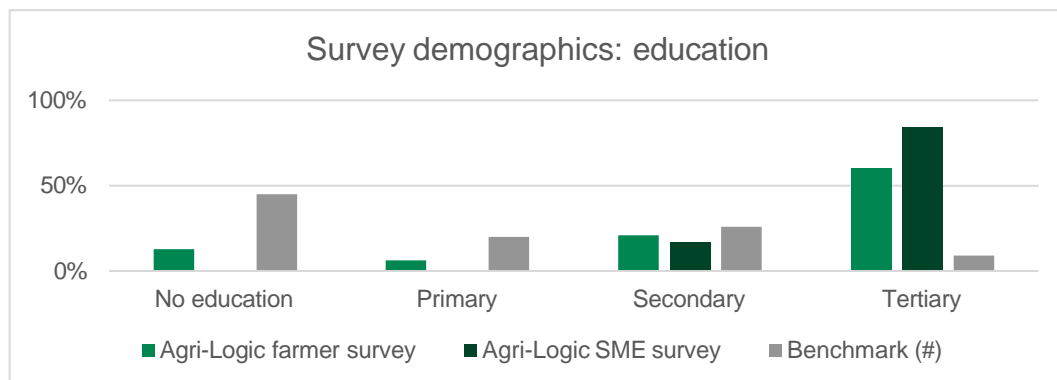


Figure 70: Survey demographics – education (sources: Agri-Logic, CGAP)

With median farms of 2-5ha the farmers that responded to the survey have somewhat larger farms than average (Figure 71). Responses from SMEs were provided by a majority of micro and small enterprises (Figure 72), defined by revenue and employment (IFC, 2012).

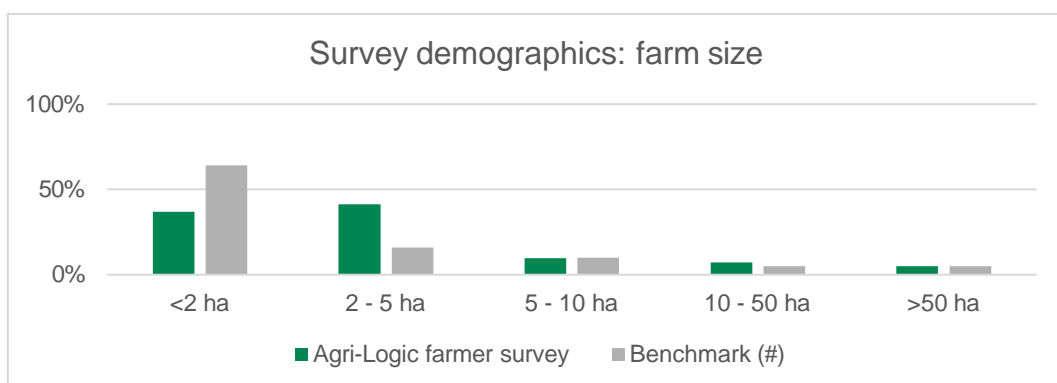


Figure 71: Survey demographics – farm size (sources: Agri-Logic, CGAP)

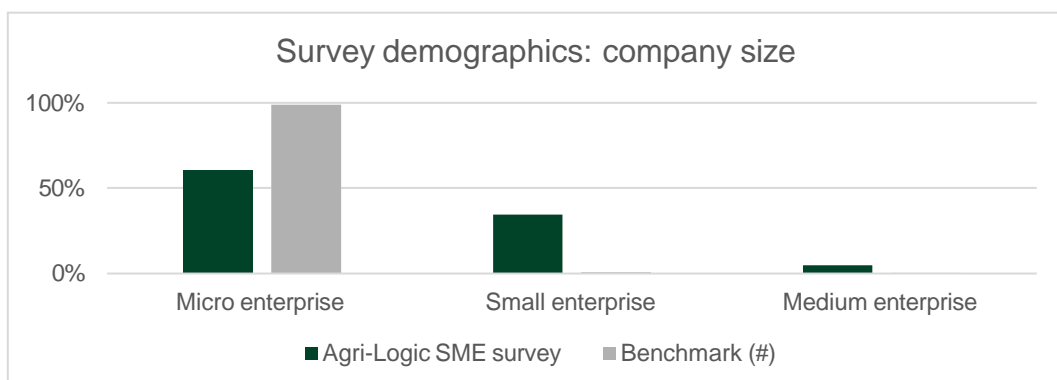


Figure 72: Survey demographics – company size (sources: Agri-Logic, SMEDAN)

Assumptions

Nigeria has a complex reality of foreign exchange, with regulated CBN rates in official exchange rate windows accessible under specific conditions, regulated Bureau de Change operators, and an informal foreign exchange market. CBN announced changes to the foreign exchange regime in 2022 (Bloomberg, 2022).

In this report and the underlying analyses, all conversions are made at the official CBN exchange rate at the first trading day of 2022. This is a rate of 413 NGN/USD as published on 4 January 2022 (CBN, 2022).

Values are quantified in their primary currency. For DFIs, private equity and diaspora investments, USD has been used as the leading currency. For all other suppliers of finance, NGN is the primary currency. Demand for finance has been quantified in NGN, except for investment in assets which are often imported in USD.

All values are rounded to millions, billions and trillions, and rounding differences may occur.

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