

Nigeria

Agribusiness Report

Includes 5-year forecasts to 2023



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Key View

Key View: Our view on the Nigerian agribusiness sector remains mixed but improving. With Nigeria ranked as the world's seventh largest producer of cocoa, the crop assumes a greater importance in the country's medium-term economic future now that oil revenues can no longer be relied on as an easy source of foreign exchange. We remain cautiously optimistic that cocoa plantations and processing facilities will continue to receive the public and private sector support needed to move forward. Poultry, dairy, sugar, rice and wheat consumption are expected to continue to depend predominantly on imports to meet demand, though a much greater percentage of demand for each of these commodities (apart from wheat) could potentially be met by local production, although to achieve this goal it is likely that further investment would be required. In each case, consumption growth is expected to be weakened by the country's macroeconomic situation, particularly in the earlier years of our five-year forecast period.

Key Forecasts

- **Cocoa production growth to 2022/23: annual average of 10% to 411,000 tonnes.** Global prices will remain sufficiently elevated to stimulate investment from government and private sector bodies.
- **Corn consumption growth to 2022/23: annual average of 4.6% to 14.1mn tonnes.** Population growth will be the key driver of increased demand.
- **Corn production growth to 2022/23: annual average of 1.5% to 11.8mn tonnes.** Production growth will be driven by improved seed varieties and recovering demand from the livestock industry in the later years of our forecast period. Base effects are also a factor, as is the move higher in corn prices over the near term.
- **Sugar consumption growth to 2022/23: annual average of 4.3% to 1.97mn tonnes.** Although global sugar prices have fallen, currency depreciation and inflation have led to Nigerian consumers paying more for sugar. The modest increases in consumption we foresee will be largely driven by population growth. Base effects are also a factor in our low growth forecasts.
- **2019 real GDP growth: 3.5%** (same as 2018). Forecast to grow by an average of 4.0% y-o-y to 2023.
- **2019 consumer price inflation (ave): 12.4%** (down from 13.1% in 2018).

Key Developments

- In Q119 it was reported that the FAO and the European Union are working together to bolster livestock and dairy industries in Nigeria. The move comes as a long conflict with terrorist insurgent group Boko Haram has left large parts of livestock farming in total disarray. The European Union project in coordination with the FAO will run between 2018 and 2020 and will target livestock farming in the Borno region, the area hardest hit due to terrorist conflicts. As part of the project, over 100,000 households in the state will be supported by various schemes including livestock distribution and training.
- The publicly owned Bank of Agriculture was capitalised to the tune of USD3.2bn in 2017, Bloomberg reported. The policy measure is intended to improve access to finance as well as providing savings options for small farmers.
- President Muhammadu Buhari's confirmation that he intends to run for a second term in 2019 has brought the probability of the central bank devaluing the official exchange rate in 2018 below 50%, meaning it is no longer our core view. While Nigeria's improving balance of payments dynamics present an attractive opportunity for much-needed exchange rate reform, it also makes the reform less necessary and Buhari's candidacy in upcoming elections means that policymakers will likely prioritise political considerations. A further devaluation of the currency would mean that Nigerian households have been paying more for imported wheat which, in turn, has stunted consumption growth in the short term. Other grains, including corn, have also increased in price dramatically, according to the Food and Agriculture Organization of the United Nations (FAO). The gain to farmers from higher prices for their crops has been counterbalanced by higher prices for imported pesticides and fertilisers, so we do not see much upside risk to our short-term forecasts.
- According to Premium Times, the World Bank is ready to support the Nigerian agricultural sector with USD200mn, with the focus of the support being on the nation's livestock sub-sector. The World Bank will be working in conjunction with the government on this initiative, which will give special attention to productivity.
- **Dangote Group**, which is run by Nigeria's richest man, Aliko Dangote, has announced that it plans to invest significantly in the

Nigerian agribusiness sector. More specifically, Dangote Group plans to invest USD3.8bn in sugar and rice and USD800mn in dairy production through to 2020. The firm is looking to boost its sugar crop output to 1.5mn metric tonnes by the same date, up from 100,000 tonnes currently. In 2018, Dangote Group signed a deal to commence the construction of integrated sugar plants in six states in Nigeria, according to sugaronline.com and reported by Nigeria's Sundiata Post newspaper.

SWOT

Agribusiness SWOT Analysis

SWOT Analysis

Strengths

- As the most populous country in Africa, Nigeria has a potentially massive market from which local producers and agribusiness firms can benefit.
- The country has large areas of arable land with the potential to cultivate a variety of crops.
- Agriculture represents around 20% of Nigeria's GDP; agriculture and agribusiness activities provide employment for 70% of the population.
- Nigeria accounts for 5% of global cocoa production and 6% of global cocoa exports.
- A young and growing population provides a large pool of labour for the agribusiness sector.

Weaknesses

- Market risk associated with corruption still permeates many levels of Nigerian agribusiness, serving as a disincentive for foreign investment. The financial sector remains weak after the crash of 2009.
- A strong dependence on oil revenues has left the country at the mercy of external factors; there is, therefore, the potential to destabilise agricultural investment and consumer spending in the future.
- Unreliable power supply hinders the development of local processing of raw goods and prevents the relevant investment needed to improve these capabilities, while simultaneously dissuading the cultivation of crops that need heavy processing, such as cocoa and sugar.
- The country relies on imports of food staples.
- A high turnover of administrative and policy regimes hampers institutional memory and policy learning by policymakers and technocrats.

Opportunities

- The continuation of recent government efforts to form public-private enterprises in output-inefficient industries is likely to lead to further private investment and increased productivity in industries such as pork production and cocoa.
- A fast-growing population will increase domestic consumption and give producers incentives to become more productive.
- Significant improvements in the reliability of local energy supplies are likely to facilitate investment growth in both agricultural production and processing industries.
- Government efforts to aid sugar production - such as incentives for local producers and high tariffs on refined sugar imports - in conjunction with privatisation and investment efforts could herald the start of a robust national sugar industry.
- There is the potential to increase Nigeria's share of global cocoa production and exports.

Threats

- The potential for politically charged activism creates an unstable business environment, potentially deterring future investment, particularly in the oil-rich Niger Delta region.
- The result of sustained oil price reductions for Nigeria - which depends on oil for over 90% of export revenues - could be the significant erosion of consumer confidence and, subsequently, investment spending.
- Further instances of import bans, such as the ban on malt barley, may harm exporters and eventually lead to underutilised capacity.
- Failure to clamp down on rice smuggling will hamper efforts to boost local rice production.
- Although much weakened, Islamist militant group Boko Haram remains active in the north of Nigeria and has previously launched attacks on the capital, Abuja. The actions of Islamist extremist groups have the potential to drive away investment, disrupt trade and send farmers fleeing from their farms in affected regions.

Industry Forecast

Cocoa Outlook

Key View: We continue to take an optimistic view of the Nigerian cocoa industry in the expectation that farmers will continue to invest in improving their crops, aided by the government, helping to maintain the country's status as the world's seventh largest producer of cocoa (International Cocoa Organisation data).

Latest Updates

- We continue to see cocoa demand accelerating by an average annual rate of 4.5% over the next five years, rising from a level of 25,400 tonnes in 2019 to reach a level of 30,200 tonnes by the end of 2023.
- Cocoa output is set to expand significantly over the coming five years, with our revised forecasting envisaging yields to grow from 289,000 tonnes in 2019 to 411,000 tonnes by year-end 2023 with growth averaging 9.6% y-o-y.
- The depreciation of the Nigerian naira against the US dollar has pushed the domestic cocoa processing industry to the brink as farmgate prices have doubled in the past two years from between NGN450,000-600,000/tonne to NGN1.2mn/tonne, according to Bloomberg. The gain to farmers from higher prices for their crops has been counterbalanced by higher prices for imported pesticides and fertilisers; therefore, we do not see much upside risk to our short-term forecasts.
- The Ekiti state government announced in Q219 that it had earmarked NGN40mn for the rehabilitation of the state cocoa industry for the upcoming 2019/20 season. The funds would be used towards increasing the cocoa output in the Ekiti state.

NIGERIA - COCOA PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2018/ 19-2022/23	Drivers
Production	9.6%	Cocoa prices are set to make a move lower; however, we continue to believe that production growth will trend higher throughout the forecast period, assuming government support is also maintained. We expect to see farmers benefiting from higher-yielding cocoa tree varieties, and greater access to fertilisers and pesticides over the coming years.
Consumption	4.5%	Despite prices being set to decrease, cocoa products are unaffordable for most Nigerians, and we expect consumption growth to be lower than output growth levels over the forecast period. The unpromising macroeconomic outlook will weigh on demand growth.
Trade	na	Nigeria will consolidate its position as one of the world's most important cocoa exporters over the coming years, although it will not challenge Côte d'Ivoire's and Ghana's status as Africa's largest exporters.

na = not applicable. Source: Fitch Solutions

RISKS TO OUTLOOK

Term	Risk
Short term	As cocoa is Nigeria's main non-oil export, we caution that the price of oil poses potential upside and downside risks for our cocoa output forecast. We forecast subdued oil prices over the medium term, underpinned by weak growth in global oil demand. On the one hand, increased earnings based on oil exports would allow for more vigorous government support of the cocoa sector and a greater commitment to the quest for economic diversification. On the other hand, decreasing receipts from the oil industry, which have typically accounted for three-quarters of state revenues, will underline the urgent need for economic diversification.

Term	Risk
	Naturally, the price of cocoa itself is an important factor in determining levels of production and consumption, with global prices being especially sensitive to any upward or downward shift in output in Ghana and Côte d'Ivoire, Africa and the world's largest cocoa producers.
	As ever, climatic conditions in the region can be unpredictable. Dry spells and wet weather can both have drastic impacts on yields and quality. However, the sector revival programme to rehabilitate or modernise farms or replant ageing trees with high-yield trees, being coordinated by the National Cocoa Development Committee, could help to strengthen crops to some degree against variable weather.
Long term	Greater investment in value-added cocoa production, such as domestic grinding and processing, would help to put the industry on a more sustainable long-term footing. Primary structural reforms must remain the immediate priority, but greater supply chain investment could also have a positive impact on the sector.
	Concerns about quality control and food safety procedures in the Nigerian cocoa industry have led to import restrictions in the EU and USA. A concerted effort to resolve these issues through improved regulation and monitoring could result in higher-quality products and greater export opportunities, while failure to do so could lead to the long-term exclusion of Nigeria from key cocoa import markets. Conversely, if Nigeria was to sign the Economic Partnership Agreement proposed between the EU and West African states or an interim individualised agreement, this would likely remove barriers to the export of cocoa products.

Source: Fitch Solutions

Structural Trends

1. In Need Of Revival

In recent years, Nigerian cocoa production has experienced relatively weak growth as a result of underinvestment, poor policymaking and technical hardship. Despite the sector's recent problems, we note the long-term potential for production growth to regain some of its former momentum under the government-backed revival programme. The aim of the programme, coordinated by the National Cocoa Development Committee, is to rehabilitate old farms, supply heavily subsidised agro-chemicals, start new plantations or replant old ones with high-yield trees and promote the local consumption of cocoa-based products to boost prices. Such a programme is underlined by the vision of the Cocoa Association of Nigeria to support the country to become the largest producer of cocoa in Africa before the year 2010. It remains to be seen what the implications of a worsening fiscal situation will be for the revival programme and whether President Muhammadu Buhari's government will maintain the policies of its predecessor. The depreciation of the Nigerian naira against the US dollar may also serve to restrict the capacity of producers to purchase imported fertilisers and pesticides.

2. An Ageing Workforce

It is not only Nigeria's ageing cocoa trees that need renewal; many cocoa farmers themselves are nearing the end of their working lives. The majority of cocoa farmers are older than 60, according to USDA representatives in Nigeria interviewed by Agrimoney. This has held back long-term investment in the industry, as older farmers do not expect to see a return on their money during their lifetime. The problem is not a shortage of workers, given Nigeria's young population and high unemployment, but rather a lack of people willing to work in this sector amid a trend towards rapid urbanisation. Children of farmers who might have been expected to take over the cocoa plantation have often relocated to seek more stable employment in urban areas.

3. Trading On Unfavourable Terms

Nigerian cocoa processors are suffering from a lack of competitiveness due to their government's unwillingness to sign a free trade agreement with the EU. Ghana, Côte d'Ivoire and Cameroon, Nigeria's West African cocoa export rivals, have agreed Economic Partnership Agreements and are not subject to the levies that Nigerian shipments face on arrival at European ports. The resulting

higher costs of Nigerian cocoa products have left firms running at a quarter of capacity since 2011. The Nigerian government opposes the trade deal because it believes that opening the local market to manufactured goods from the EU will destroy its fledgling domestic manufacturing sector. The latest round of talks failed to produce an agreement.

4. Cocoa Price Forecasts Revised Higher Despite Limited Shift In Fundamentals

We are maintaining our cocoa price forecasts and see prices hovering around the GBP1,750/tonne level out to 2023. Although we expect the market to tighten and, thus, forecast 2018 prices to average above spot levels (around GBP1,400/tonne), the rebound in prices up to mid-2018 has since fizzled. Despite the volatility in prices, we have made limited changes to our fundamental forecasts and continue to expect the market to sustain small but consistent surpluses out to 2023. In particular, we forecast global production to remain very strong by historical standards between 2019 and 2023, although we anticipate considerably weaker growth going forward due to high base effects as well as lower average prices discouraging increased input use in West Africa. Growth in grindings (ie consumption) will also be limited, as regional grindings in Europe and the Americas are reaching cyclical highs. However, like global production, we expect consumption to remain elevated by historical standards due to strong global economic growth. Our new price forecasts are close Bloomberg consensus but above prices implied by the futures curve.

COCOA PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)

Indicator	2017e	2018e	2019f	2020f	2021f	2022f	2023f
Cocoa market value, % of total	8.7	10.5	11.6	11.7	12.2	12.6	
Cocoa production, '000 tonnes	245.0	260.0	288.6	325.3	366.6	389.0	411.0
Cocoa production, % y-o-y	22.5	6.1	11.0	12.7	12.7	6.1	5.7
Cocoa Consumption, '000 tonnes	23.2	24.2	25.4	26.5	27.7	28.9	30.2
Cocoa consumption, % y-o-y	1.7	4.6	4.6	4.5	4.5	4.5	4.4

e/f = Fitch Solutions estimate/forecast. Source: ICCO, Fitch Solutions

Rice Outlook

Key View: Nigeria is one of the world's most important markets for rice imports, and we expect this to remain the case for the foreseeable future. Although higher global prices and macroeconomic conditions in Nigeria will make imports less affordable, financial constraints will place limits on the government's capacity to provide support for much-needed improvements in yields and quality. While we believe that the risks to output are weighed to the downside, the recent turnaround and move higher in global rice prices has seen us forecast an average annual growth rate of 3.4% for rice output in Nigeria.

Latest Updates

- We have revised upwards our forecasts for both rice production and consumption in Nigeria. This comes after an upwards revision in our historical data for both rice output and demand, starting in 2012 for the former and 2013 for the latter.
- We now forecast rice production in Nigeria to reach almost 4.8mn tonnes in 2019 before continuing its growth by an average annual rate of 3.4% across our forecast period to reach 5.5mn tonnes in 2023.
- We are forecasting rice consumption to grow by 1.8% in 2019 to reach 7.22mn tonnes. Over the medium-term to 2023, rice consumption will grow at an average annual rate of 2.23% to reach around 8mn tonnes by end of our forecast period.
- The government provided subsidised fertiliser to farmers in 2017/18, according to AgroNigeria. Minister of Agriculture and Rural Development Auda Ogbeh announced in January that 800,000 tonnes of nitrogen, phosphorous and potassium fertiliser would be imported from Morocco and prices would be brought down from NGN7,500 to NGN5,000 per bag. A **USDA** report raised concerns about the apparent abolition of subsidies on fertiliser and restricted availability of fertilisers in parts of the country on security grounds.
- The widely reported 'plastic rice' scandal highlights the challenge facing Nigerian customs officials in controlling imports of the staple grain. The National Agency for Food and Drugs (Nafdac) later confirmed that the rice was not plastic, but was nevertheless unsuitable for human consumption due to the presence of contaminants, according to the BBC. Nigeria has officially banned overland imports of rice, but high tariffs at the ports where importation is allowed will ensure that the market for smuggled rice continues to thrive.
- The Nigerian government has actively been supporting the growth of domestic rice and with around 70% duty in imported rice has encouraged higher farming at home. Furthermore, the government had offered various loan schemes to encourage higher production.

NIGERIA - RICE PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2018/ 19-2022/23	Drivers
Production	3.4%	Modest output growth will be largely driven by private sector investment and protectionist trade policies. There is likely to be greater demand for locally produced rice as imports become more expensive.
Consumption	2.25%	The deteriorating macroeconomic situation and the depreciation of the naira will make imported rice more expensive for consumers. Our expectation for modest annual increases in demand is attributable to population growth. We see consumption in per capita terms hovering at 24-25kg over our forecast period.
Trade	na	Nigeria is heavily reliant on rice imports to meet demand and will remain so over the medium term, despite our production growth forecasts outperforming our consumption growth forecasts. The government has rowed back from using punitive tariffs to protect local producers after an explosion in smuggling. Restrictions on US dollar purchases for rice traders are likely to reduce imports through official channels and to increase informal cross-border trade.

na = not applicable. Source: Fitch Solutions

RISKS TO OUTLOOK

Term	Risk
Short term	Recent declines in the oil price and the weakening naira over recent quarters could make imported rice less affordable for poorer urban households. This represents a downside risk to our consumption forecasts and a possible upside risk for production forecasts, though it will be tempered by the impact lower oil revenues might have on government expenditure on agriculture.
	Changes in the price of imported rice pose downside and upside risks. A fall in prices could have a negative effect on domestic production by encouraging a greater reliance on imports; higher international prices would most likely encourage domestic production.
	The food security situation in Borno state is deteriorating due to the impact of the civil conflict in the region. As a result, a growing number of farmers are fleeing from their farms due to the onslaught of the Boko Haram Islamist insurgency. This represents a setback for the country's efforts to cut imports by boosting local production and presents a downside risk to our current rice forecasts.
Long term	The weak currency has suppressed Nigerian demand for imports from neighbouring countries. In turn, this has affected household income and food security, particularly in the Sahel countries that usually export livestock and cash crops to Nigeria. What is more, the currency weakness and the removal of subsidies have also increased fuel prices and consequently transport costs, which are reportedly up to 200-300% above average, exacerbating the costlier and reduced imports.
	A major long-term risk to our rice production forecast hinges on repeated government threats to ban all rice imports. If implemented, a ban on imported rice could have a positive impact on production, allowing domestic rice producers to boost output in order to meet local consumption requirements. However, it is doubtful that any feasible increase in domestic supply would be sufficient to meet Nigeria's considerable and growing demand for the grain.
	Although substantial funds have been made available to boost output and reduce import dependency, risks remain that historical underinvestment and structural supply chain inefficiencies could make the process of improvement a slow one. Conversely, production would likely benefit from any number of support initiatives, including greater investment in irrigation or the provision of improved access to finance for farmers.
	President Muhammdu Buhari's decision to stand as a presidential candidate in the upcoming February 2019 general election

Term

Risk

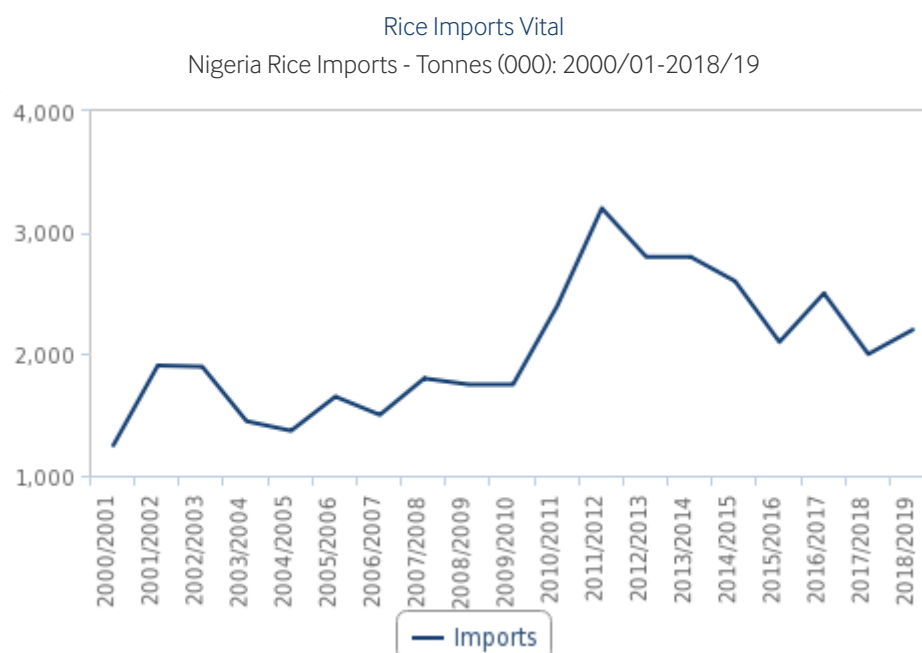
has led us to abandon our forecast that the CBN would devalue the naira in H118. Although officially independent, the CBN has allegedly come under substantial political pressure from the Buhari administration to maintain the official exchange rate's hard peg against the US dollar in recent years. The delayed expectations of a naira devaluation means that the price of agricultural imports will not suddenly be increasing, a move which would boost demand for supply from the local market.

Source: Fitch Solutions

Structural Trends

1. Underwhelming Yields

Although the amount of land under rice cultivation in Nigeria has remained fairly constant, yields continue to show gradual improvements. However, this progress is coming from a very low base. The World Bank's 2014 report on 'Agribusiness Indicators in Nigeria' states that crop yields in that country are as little as 20% to 50% of yields achieved in comparable low-income countries. In the case of rice, a lack of availability of high-quality seed and fertilisers is to blame. Rice yields across Nigeria are typically as low as 1.9 tonnes per hectare (ha), but when farmers had access to improved seed varieties and fertilisers, this increased to an average of around 6 tonnes/ha. Even modest increases in the availability of key inputs could deliver substantial increases in yields and move the country closer to the government's stated goal of self-sufficiency.



Source: USDA

2. Wavering Government Support?

Subsidies to inputs and training schemes enjoyed by farmers in previous years have been withdrawn amid government budget cuts, according to a USDA update on the Nigerian grains complex published in November 2016. Improvements to irrigation and communications infrastructure are further areas dependent on public sector investment, the neglect of which will hamper rice production growth. We have lowered our output forecasts in response to these reports, as we do not see the private sector being able to overcome the challenges facing the industry alone. In the absence of positive assistance, the most significant forms of government support will include subsidies for rice millers, who invest in local production and the maintenance of a high tariff.

3. Reliant On Imports

Despite the introduction of earlier government campaigns aimed at boosting domestic production volumes and quality, total demand for rice is expected to remain well in excess of Nigeria's productive capacity. This phenomenon will fuel a continued reliance on imports, legally sanctioned or otherwise. Nigeria is the world's third biggest importer of parboiled rice, which mainly comes from Thailand and India. Although it is more expensive, imported rice is preferred by most Nigerians on the basis of perceptions of superior quality and taste. We expect this to remain the case in the foreseeable future, although the depreciation of the naira and foreign exchange controls on importers will act as a brake. Nigeria's previous minister for agriculture announced plans to achieve self-sufficiency by 2015 and ban imports. These plans were then modified, with the target to achieve self-sufficiency by the end of 2017. While not feasible in our view, these delayed measures are likely to prove practically and politically impossible, given that we expect a negative balance to be sustained out to 2023.

RICE PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)

Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Rice production, '000 tonnes	4,410.0	4,662.0	4,788.0	5,013.0	5,248.6	5,495.3	5,510.0
Rice production, % y-o-y	11.9	5.7	2.7	4.7	4.7	4.7	0.3
Rice consumption, '000 tonnes	6,700.0	7,100.0	7,227.8	7,408.5	7,586.3	7,760.8	7,931.5
Rice consumption, % y-o-y	4.7	6.0	1.8	2.5	2.4	2.3	2.2

e/f = Fitch Solutions estimate/forecast. Source: National sources, Fitch Solutions

Dairy And Livestock Outlook

Key View: While substantial investment is needed across the board in Nigeria's dairy and livestock sectors in order to maintain both sectors' long-term growth, our forecasts remain broadly positive for the next five years through to 2023. After recent contractions, we forecast growth across all sub-sectors in terms of both production and consumption in 2019 in the markets that we track. Within our forecasts, we see poultry outperforming pork in the livestock complex in both production and consumption growth across our forecast period, with the former set to remain the most popular meat among Nigerians. Despite the positivity, we acknowledge that there is plenty of downside risk building with the less promising macroeconomic situation likely to weigh on growth.

Latest Updates

- We forecast poultry production to grow by a solid 6.1% in 2019 to reach 178,000 tonnes. Over the medium term to 2023, we expect annual output to reach 226,000 tonnes.
- Pork production over 2019-2023 will grow from 284,000 tonnes to 341,000 tonnes. Beef and veal output over our forecast period is slated to grow to 374,000 tonnes by year-end 2023, up from 373,000 in 2019 (we account for weak growth owing to high costs of farming) and the poor household spending outlook.
- On the consumption front, poultry will lead the complex with demand growing from 357,000 tonnes in 2019 to over 441,000 tonnes by 2023.
- Nigerian milk production will grow at an average annual pace of 2.5% over the 2019-2023 period with output jumping from 657,000 tonnes in 2019 to 725,000 tonnes by year-end 2023. We note that significant investments are needed to bolster dairy production in the country.
- In Q119, it was reported that the **FAO** and the European Union are working together to bolster livestock and dairy industries in Nigeria. The move comes as a long conflict with terrorist insurgent group Boko Haram has left large parts of livestock farming in total disarray.
- The European Union project in coordination with the FAO will run between 2018 and 2020 and will target livestock farming in the Borno region, the are hardest hit due to terrorist conflicts. As part of the project, over 100,000 households in the state will be supported by various schemes including livestock distribution and training.

NIGERIA - POULTRY PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2018/ 19-2022/23	Drivers
Production	6.1%	Although the production of poultry will benefit from increased investment and greater commercialisation, the industry will remain fragmented. Security concerns continue to affect investment and logistics. Feed costs represent about 60-70% of total production costs in Nigeria's poultry sector. As a result, high local prices will act as an impediment to stronger production growth. Smuggling is also a problem for the industry. The ongoing bird flu outbreak only adds to the raft of challenges facing the industry.
Consumption	5.3%	Poultry will remain the most popular meat among Nigerians, with steady y-o-y demand increases driven by population growth. Higher inflation and lower economic growth will prevent more impressive growth.
Trade	na	Smuggling of banned frozen poultry products is a longstanding problem for Nigeria. As long as demand continues to outstrip supply, there will be demand for cheap imported poultry meat.

na = not applicable. Source: Fitch Solutions

NIGERIA - PORK PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2017/ 18-2021/22	Drivers
Production	4.7%	Government support and improved farming techniques will be the main factors supporting supply growth. Nigeria's current dependence on imported pork, together with the relatively high price of the product on local markets, is likely to help stimulate domestic production. Weaker domestic demand will act as a brake on output growth.
Consumption	3.8%	Our modest pork demand growth forecasts reflect tight supplies that will lead to increased prices for imported pork, as well as the likelihood that financially strained households will cut expenditure on discretionary items.
Trade	na	Demand for pork will continue to outpace supply, leaving Nigeria reliant on pork imports.

na = not applicable. Source: Fitch Solutions

NIGERIA - MILK PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2017/ 18-2021/22	Drivers
Production	2.5%	Public-private investment sufficient to help dairy farmers invest in inputs and improve herd genetics may not be forthcoming over the forecast period due to the more challenging economic outlook. Additionally, the industry depends for its future sustainability on consolidation and on the upgrading of the processing and transportation infrastructure. We do not expect such developments to take root in the next five years.
Consumption	5.0%	Demand for milk will be driven by a young and fast-growing population. The weaker economic growth we expect to see over the coming years will prevent more robust increases in consumption. We note that, in addition to liquid milk consumption, Nigeria is a significant consumer of imported dried powdered milk.
Trade	na	The Nigerian dairy market will become increasingly important for EU exporters, particularly of whole dried milk powder. There is no prospect on the horizon of Nigeria becoming a regional exporter of dairy products.

na = not applicable. Source: Fitch Solutions

RISKS TO OUTLOOK

Term	Risk
Short term	<p>Disease continues to be one of the biggest downside risks to poultry production. The ongoing outbreak of the H5N1 strain of the avian influenza virus (bird flu) illustrates the risk.</p> <p>Both poultry and pork are vulnerable to fluctuations in the international price of grains used for animal feed. In Nigeria, feed costs represent around 60-70% of total production costs. Consequently, a sustained period of high corn and soya prices, both of which are basic ingredients of animal feed, would push up agricultural input costs for livestock producers, posing a downside risk to production.</p> <p>With regard to the consumption of meat and dairy products, higher-than-expected inflation represents a downside risk. The impact of higher inflation could be particularly severe in the case of the higher-value pork sector. Pork would probably be among the discretionary products scaled back in the event of a sharp rise in living costs.</p>
Long term	<p>The security situation remains a serious concern for livestock producers, especially poultry farmers in the north of Nigeria. Boko Haram attacks have targeted markets and transportation links that are fundamental to the survival of the industry. Any</p>

Term

Risk

further deterioration in the security situation would present a major downside risk.

Desertification in the Sahel regions of northern Nigeria poses a long-term threat to the sustainability of dairy farming in this part of the country. The Fulani herdsmen who have traditionally grazed their cattle on grasslands in northern Nigeria have been identified as potential suppliers by multinational dairy processors operating in the country, but there is a risk that their pastoral farming will be made unsustainable.

The Food and Agricultural Organisation (FAO) has flagged a risk that Nigeria could face a sharp rise in demand for its livestock production in the next 30-40 years. According to Nigeria's The Nation newspaper, FAO Country Representative in Nigeria, Suffyan Koroma, recently stated that the prediction was based on FAO data that suggest that demand will spike for livestock-based foods as Nigeria's population rapidly increases and consumer purchasing power and the process of urbanisation in the country accelerates.

Source: Fitch Solutions

Structural Trends

1. Small Scale, Low Tech

The livestock industry is dominated by small-scale enterprises. Many of these operations lack adequate staff training, struggle to access finance and have low profit margins because of high costs and production inefficiencies. The provision of better infrastructure, including roads, electricity and water for farms, have been identified by industry representatives and the government as key requirements for improving the processing, storage and transportation of poultry. In the absence of substantial modernisation of the industry, domestic livestock production will continue to struggle to keep pace with consumption. In turn, consumption will continue to be hampered by the problems associated with product availability and affordability. We expect the prices of domestic pork and poultry to remain relatively high as a result of these production inefficiencies.

2. High Feed Costs

The fragmentation of the poultry sub-sector makes it particularly vulnerable to fluctuations in the cost of feed. It has been estimated by local researchers that over 70% of the costs of poultry producers are accounted for by feed. The animal nutrition industry in Nigeria is still in its infancy. **Olam International** is set to open the country's largest animal feed and poultry hatchery operation and forecasts 10% y-o-y growth in the animal feed market over the next five years. While such developments may lead to lower cost specialised feed becoming more widely available over the medium term, in the meantime, poultry producers are struggling to feed their animals while making a profit. The depreciation of the naira has only served to worsen matters as the price of corn, the key ingredient in poultry feed, has rocketed alongside other grains.

3. Import Restrictions

Nigeria's state and federal governments have identified the poultry sector as a key area for greater investment and support. Early initiatives to promote the development of the sector included the introduction of a ban on imported frozen poultry in July 2002. Prior to introducing the ban, virtually all poultry meat imports entered the country unrecorded. In addition to almost doubling the growth of local poultry production in the five years following its introduction, the ban has been credited with helping to create at least 20,000 jobs in the poultry sector and related industries. The flipside is that smuggling, mainly through the border with Benin, has soared. Illegally transported chicken carcasses sell at almost half the price of local products, according to some reports, though the government is taking steps to prevent smuggling.

4. Investment Needed

Nigeria's dairy industry has traditionally suffered from the same sort of supply chain inadequacies that affected its other livestock sectors. Although demand for dairy products is set to continue growing in the longer term on the back of rising disposable incomes, the difficulty of getting fresh milk from dairy processor to store will act as a major impediment to even stronger demand growth. A further barrier is the lack of refrigerators in many Nigerian households. Ultimately, domestic demand is expected to encourage further commercialisation and improved production efficiencies. However, the level of investment needed to make major infrastructural improvements means that production growth will lag behind demand growth. The development of the industry is seeing some support from foreign investors hoping to take advantage of a potentially huge market.

5. World Bank Supporting Livestock Sector

According to Premium Times, the World Bank is ready to support the Nigerian agricultural sector with USD200mn, with the focus of the support being on the nation's livestock sub-sector. The World Bank will be working in conjunction with the government on this initiative, which will give special attention to productivity.

MILK PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)							
Indicator	2017e	2018e	2019f	2020f	2021f	2022f	2023f
Milk market value, % of total	4.0	3.4	3.4	3.4	3.3	3.2	
Milk production, '000 tonnes	633.0	641.0	657.0	673.5	690.3	707.5	725.2
Milk production, % y-o-y	1.9	1.3	2.5	2.5	2.5	2.5	2.5
Liquid milk consumption, '000 tonnes	1,005.0	1,017.0	1,062.8	1,119.6	1,177.8	1,235.6	1,298.6
Liquid milk consumption, % y-o-y	0.6	1.2	4.5	5.4	5.2	4.9	5.1

e/f = Fitch Solutions estimate/forecast. Source: FAO, Fitch Solutions

LIVESTOCK PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)							
Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Poultry production, '000 tonnes	158.4	168.0	178.2	189.1	200.7	212.9	225.9
Poultry production, % y-o-y	-3.2	6.1	6.1	6.1	6.1	6.1	6.1
Poultry consumption, '000 tonnes	327.7	342.0	356.7	376.3	398.5	419.6	441.5
Poultry consumption, % y-o-y	2.0	4.4	4.3	5.5	5.9	5.3	5.2
Pork production, '000 tonnes	258.8	270.9	283.7	297.0	310.9	325.6	340.9
Pork production, % y-o-y	-2.4	4.7	4.7	4.7	4.7	4.7	4.7
Pork consumption, '000 tonnes	270.4	280.0	290.5	301.5	313.0	325.1	337.7
Pork consumption, % y-o-y	-0.7	3.6	3.8	3.8	3.8	3.8	3.9
Beef & veal production, '000 tonnes	373.4	376.1	373.3	374.3	374.5	374.0	374.3
Beef & veal production, % y-o-y	0.8	0.7	-0.7	0.3	0.1	-0.1	0.1
Beef & veal consumption, '000 tonnes	396.0	404.0	419.0	429.4	441.7	451.7	453.8
Beef & veal consumption, % y-o-y	1.1	2.0	3.7	2.5	2.9	2.3	0.5

f = Fitch Solutions forecast. Source: FAO, Fitch Solutions

Grains Outlook

Key View: We continue to see modest scope for corn production to increase over our five-year forecast period to 2022/23. Improvements to yields, which have benefited from government investment in hardier seed variants, as well as higher prices, will be the main drivers of growth. However, growth in demand for corn will continue to outpace corn output growth across our forecast period. Wheat production will struggle to recover from the effects of sustained insecurity in the restricted areas suitable for cultivation in the near term, before beginning its growth once more in 2020.

Latest Updates

- We forecast corn yields at 11mn tonnes in 2018/19, a figure largely unchanged over the previous year. Looking ahead, we expect steady average annual uptick out to 2023.
- Wheat and corn consumption will continue to grow steadily in 2019 and over the 5 years to 2023. Wheat demand will be bolstered by a growing population and a healthy national appetite. Corn consumption will receive a boost from the livestock and feeds sector.
- The Nigerian government provided subsidised fertiliser to farmers in 2017, according to AgroNigeria. Minister of Agriculture and Rural Development Auda Ogbeh announced in January that 800,000 tonnes of nitrogen, phosphorous and potassium fertiliser would be imported from Morocco and prices would be brought down from NGN7,500 to NGN5,000 per bag. The USDA's latest report on Nigerian grain production, published in November, raised concerns about the apparent abolition of subsidies on fertiliser and restricted availability of fertilisers in parts of the county on security grounds.
- President Muhammadu Buhari's confirmation that he intends to run for a second term in 2019 has brought the probability of the central bank devaluing the official exchange rate in 2018 below 50%, meaning it is no longer our core view. While Nigeria's improving balance of payments dynamics present an attractive opportunity for much-needed exchange rate reform, it also makes the reform less necessary and Buhari's candidacy in upcoming elections means that policymakers will likely prioritise political considerations. A further devaluation of the currency would mean that Nigerian households have been paying more for imported wheat which, in turn, has stunted consumption growth in the short term. Other grains, including corn, have also increased in price dramatically, according to the Food and Agriculture Organization of the United Nations (FAO).

NIGERIA - WHEAT PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2018/ 19-2022/23	Drivers
Production	2%	The disruptions caused by Boko Haram have hampered production of wheat in particular, but as the insurgency wanes, we see scope for a partial recovery in the latter years of our forecast period. Local climatic conditions make wheat unsuitable for production in much of Nigeria.
Consumption	4.1%	This increase will be driven largely by population growth and a rising national appetite. Furthermore, the expansion in household incomes will also bolster basic staple foods.
Trade	na	Nigeria will continue to be one of the world's leading importers of wheat, despite government ambitions to achieve self-sufficiency. However, lower foreign currency reserves and the troubled economic situation may act as a dampener on imports.

na = not applicable. Source: Fitch Solutions

NIGERIA - CORN PRODUCTION AND CONSUMPTION OUTLOOK

	Average Growth Rate 2018/ 19-2022/23	Drivers
Production	1.4%	Production growth will be driven by improved seed varieties and recovering demand from the livestock industry in the later years of our forecast period. Base effects are also a factor.
Consumption	4.6%	Population growth will be the main driver of consumption growth as we see corn prices increasing over the forecast period. The poultry industry will remain an important consumer of corn given the steady uptick.
Trade	na	The government's stated ambition to make Nigeria a significant corn exporter is unlikely to be realised over the medium term.

na = not applicable. Source: Fitch Solutions

RISKS TO OUTLOOK

Term	Risk
Short term	<p>The main downside risk to the production of corn is the vulnerability of the grain to variations in rainfall; this is particularly the case in the drought-prone north of the country and in the southern delta regions, where floods disrupt agricultural activity.</p> <p>Demand for corn as livestock feed has grown in importance, such that our consumption forecasts would be affected by downturns in poultry production in particular.</p> <p>Meanwhile, the production and consumption of both wheat and corn is vulnerable to global supply considerations and accompanying price dynamics. Wheat consumption is particularly vulnerable to global price fluctuations as the vast majority is imported.</p> <p>The deteriorating food security situation in Borno state, due to the impact of the civil conflict in the region. This represents a setback for the country's efforts to cut imports by boosting local production and presents a downside risk to our current grain forecasts. For wheat, there is the risk that instability in the north of Nigeria could end up causing production to cease entirely.</p>
Long term	<p>In light of its role as a staple food, corn stands to benefit from any scaled-up government agricultural support. Increased investment would build on the progress already made in terms of improving the availability and affordability of agricultural inputs. Higher levels of investment could, therefore, result in stronger-than-expected production growth towards the end of our current forecast period. Hardier yield variants would probably be an important form of investment. Fiscal constraints may lead to a drawing back of state support for agriculture.</p>

Source: Fitch Solutions

Structural Trends

1. Interdependent With Poultry

The livestock industry has been one of the key drivers of demand growth for corn over the past five years, with the use of corn for animal feed rising from 1.4m tonnes to 1.9mn tonnes between 2010 and 2015, according to the USDA. As of the latest USDA data correct to Q119, this figure has reached around 2.0mn. Poultry farming has been the most significant contributor to this growth. Nevertheless, the poultry industry will remain fragmented and faces significant challenges from illegal imports and disease outbreaks, such that we expect to see limited demand growth for corn driven by the livestock sector over our forecast period.

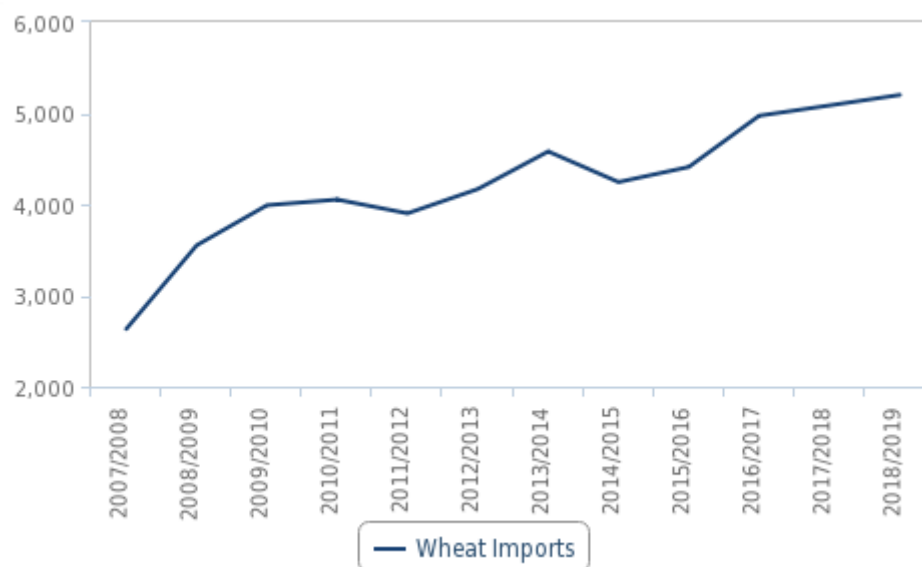
2. Low Fertiliser Use

The Nigerian agribusiness sector has some of the lowest levels of fertiliser use among African countries. The domestic fertiliser industry collapsed after deregulation, meaning that producers rely on relatively expensive imports. A recent World Bank report highlights the subsidy system as part of the problem: less than 30% of the fertiliser sold at subsidised rates reaches farmers directly, as middlemen profit by buying the fertiliser at the cheaper price from government officials and then selling it on to farmers at market rates. A pilot project using registration and mobile communications technology to ensure fertiliser reaches farmers directly has enjoyed some success: 94% of farmers in the trials now receive subsidised fertiliser, up from around 20% before the reforms. Security concerns have also restricted access to fertilisers in some parts of the country, according to the USDA. Until the obstacles to fertiliser use can be overcome, Nigerian crop yields will remain far below their potential.

3. Food Aid Driving Wheat Consumption

There were around 1.8mn internally displaced persons in the north-east regions of Nigeria by 2018, according to the FAO. According to the last Cadre Harmonisé (CH) analysis conducted at the same date, in 16 out of Nigeria's 36 states, 7.1mn people (about 7.5% of the population) face acute food insecurity and require urgent life-saving response and livelihood protection. Around 5.6mn people (6%) are in CH Phase 3: Crisis, 1.4mn (1.5%) in CH Phase 4: Emergency and 44,000 people in CH Phase 5: Famine (ie, IPC Catastrophe). The continued conflict in the northern part of the country has resulted in widespread disruption in agricultural and marketing activities and has caused massive displacement. The majority of this population is dependent on food aid provided by foreign non-governmental organisations (NGOs) and the National Emergency Management Agency. Purchases of wheat by these donor organisations are among the factors that will drive wheat consumption in Nigeria higher in the short term. Growing incomes and changing tastes among Nigeria's middle class, which has begun to favour pasta and baked goods, have been among the key drivers of rapid growth in wheat consumption.

Robust Wheat Imports
Nigeria Wheat Imports: 2007/08-2018/19 (Tonnes -000)

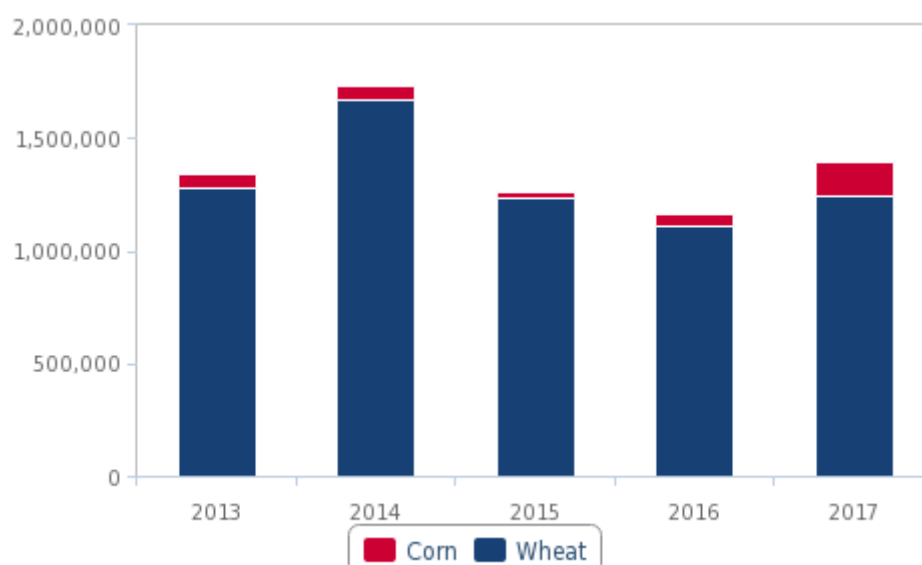


Source: USDA

4. Crop Improvements

Nigerian farmers are expected to benefit over the coming years from the increasing availability of maize hybrids adapted to flourish in drought and other challenging conditions. Hybrid development and promotion is a promising strategy not only to increase yields, but also to spread corn production north into areas routinely affected by drought. President Buhari's administration and the Nigerian government more generally are reported by the USDA to be supportive of the use of biotechnology. However, the Biosafety bill signed by the previous administration in 2015 requires an extensive process of certification and no genetically engineered crops are currently under commercial cultivation in the country, despite the favourable political environment.

Grain Import Values Trending Stable
Nigeria Corn & Wheat Import Values: 2013-2017 (USD-000)



Source: Trade Map

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5. Could Wheat Rebound?

The disruptions caused by Boko Haram have hampered production of wheat in particular, as investors have been deterred, harvesting has been interrupted and distribution has been impaired. Local climatic conditions make wheat largely unsuitable for production in Nigeria except for in the north of the country, where Boko Haram is most active. However, with the number of attacks reducing substantially in 2016, there may be hope of a recovery on the horizon. The government has already tried to resuscitate wheat production with subsidy schemes and distribution of improved seed, but these schemes had little impact amid the conflict. If displaced people are able to return home, there is the prospect that output can begin to recover with support from NGOs and the federal government to reconstruct ravaged farmland and infrastructure.

GRAIN PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)							
Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Wheat production, '000 tonnes	60.0	60.0	60.0	62.0	63.0	64.0	66.0
Wheat production, % y-o-y	0.0	0.0	0.0	3.3	1.6	1.6	3.1
Wheat consumption, '000 tonnes	4,632.0	4,745.0	4,882.6	5,053.5	5,260.7	5,507.9	5,799.9
Wheat consumption, % y-o-y	13.8	2.4	2.9	3.5	4.1	4.7	5.3
Corn production, '000 tonnes	10,500.0	11,000.0	11,000.0	11,275.0	11,444.1	11,592.9	11,766.8
Corn production, % y-o-y	-2.4	4.8	0.0	2.5	1.5	1.3	1.5
Corn consumption, '000 tonnes	11,100.0	11,300.0	11,819.8	12,363.5	12,932.2	13,527.1	14,149.4
Corn consumption, % y-o-y	15.6	1.8	4.6	4.6	4.6	4.6	4.6

e/f = Fitch Solutions estimate/forecast. Source: National sources, Fitch Solutions

Sugar Outlook

Key View: We hold a positive view for Nigeria's sugar market over our five-year forecast period and expect growth in output to improve strongly out to 2023. Despite this, overall output production levels are still set to remain low in comparison with demand figures. Although the government has set out ambitious aims to increase production efficiencies and reduce Nigeria's massive sugar import dependency, with the end goal being sugar self-sufficiency for the country, we expect fiscal constraints will prevent these plans from coming to fruition in the near future. Therefore, we expect Nigeria to remain a major importer of refined sugar, reflecting the high level of domestic demand and relatively insignificant output.

Latest Updates

- Our forecasts for sugar consumption and historical data have been positively revised in the latest Q219 update to account for the higher than expected consumption trends seen in 2017/18.
- We anticipate sugar consumption to grow by 2.5% in 2019 to reach 1.640mn tonnes. Over the medium term to 2023, we expect average annual growth of 4.3% with total sugar consumed reaching 1.97mn tonnes.
- Sugar is particularly dependent on state support since production requires substantial start-up costs and refineries are more able to make a profit by importing and processing raw sugar.
- The acting head of the National Sugar Development Council (NSDC) Samuel Kwabe has expressed concerns that the country's ambitions to be self-sufficient in sugar are being hampered by macroeconomic factors. Speaking to Bloomberg, Kwame reported that the weakness of the naira was preventing sugar producers from importing machinery and plant components. Nevertheless, the NSDC remains confident of meeting the government's ambitious target of 1.5mn tonnes of sugar output by 2023.
- Nigeria's largest sugar miller **Dangote** has been forced to cut back on imports of unrefined sugar, according to Reuters. The move is due to a shortage of foreign exchange and higher prices for US dollar-denominated trade on the back of the depreciation of the naira. Dangote is unlikely to be able to make use of its spare capacity by milling domestically produced sugar, given the paucity of local production, but it may be a further spur to the refining industry to invest in the plantations they are expected to develop as part of the government's Backward Integration Plan.
- Dangote Group has also signed a deal to commence the construction of integrated sugar plants in six states in Nigeria.

NIGERIA - SUGAR PRODUCTION AND CONSUMPTION OUTLOOK

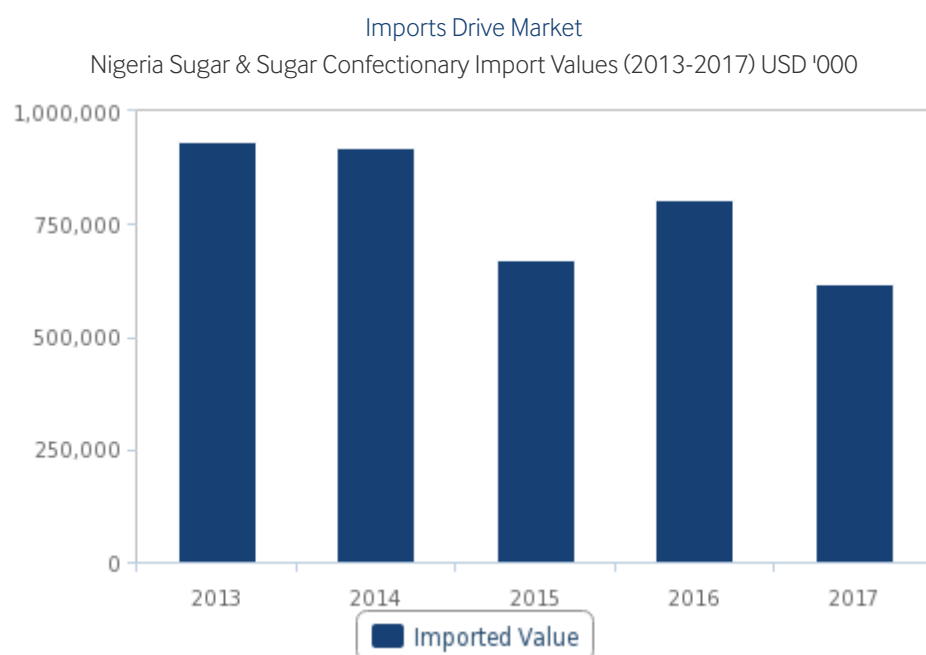
	Average Growth Rate: 2018/ 19-2022/23	Drivers
Production	2%	Private sector investment and high tariffs on refineries not investing in domestic production will support strong growth, albeit from a very low base. Limited public sector support and infrastructural deficiencies will impede the large-scale revival and medium-term self-sufficiency envisioned by the government.
Consumption	4.3%	Although global sugar prices have fallen, currency depreciation and inflation have led to Nigerian consumers paying more for sugar. The increases in consumption we foresee will be largely driven by population growth. Base effects are also a factor in our low growth forecasts.
Trade	na	Nigeria will continue to be a major importer of unrefined sugar, largely from Brazil, over the coming years. Imports levels will be adversely affected by the weakness of the naira in the early years of our forecast period.

na = not applicable. Source: Fitch Solutions

RISKS TO OUTLOOK

Term	Risk
Short term	<p>The present situation of declining revenues as the price of oil slumps poses a risk to further government investment in the sugar segment, though if the oil price were to remain low, costlier imports due to a shortage of foreign exchange could spur increased demand for locally produced sugar.</p> <p>The main downside risk to our forecast for sugar consumption stems from the sector's dependency on imported raw sugar. With a massive sugar import bill, Nigerian sugar consumption is vulnerable to international price fluctuations. If threats to ban imports were entirely carried out, this would very likely lead to shortages, a sharp increase in prices and a steep drop in consumption.</p>
Long term	<p>One of the biggest upside risks to our production forecast is the prospect of increased investment in the development of sugar cane estates and their associated milling capabilities. Although almost all of Nigeria's sugar is refined within the country, the industry is still heavily dependent on raw sugar imports. Over the long term, increased production of raw sugar would enable Nigeria to cut import costs. By capitalising on its refining capacity, there is potential for Nigeria to develop its position as an exporter of refined sugar.</p> <p>Despite recent improvements to Nigeria's electricity supply, the provision of electricity remains somewhat volatile and inefficient. Infrastructural and policy reforms would do much to sustain reliable energy dispersal and benefit the sugar industry; but for now, underinvestment poses a downside risk to our production forecast. Similarly, investment in roads and other key infrastructure in sugar cane growing areas would allow for the development of refining facilities in these areas.</p>

Source: Fitch Solutions



Source: Trade Map

Structural Trends

1. Backward Integration

The sugar industry has been negatively affected by poor fundamentals, which saw production all but disappear for a time in the early 2000s. In order to improve matters, in July 2013 the federal government commenced the implementation of the Backward Integration Policy (BIP) in the sugar industry. The BIP requires sugar refining companies to invest in local sugar cane production and

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processing. Currently, the vast majority of sugar refined in Nigeria is imported from Brazil. Separate initiatives, the sugar 'Master Plan' and the 'Nigeria Industrial Revolution Plan', also promise to provide large-scale financial support to the industry. We have reservations about the willingness and capacity of the government to implement these initiatives in the present challenging macroeconomic environment.

The BIP has now entered its second phase, which will run from 2018-2023. The three BIP participants are expected to develop eight new sites across the second half of the implementation period: Dangote Sugar three, **BUA** two and **Golden Sugar** three. Okechukwu Enelamah, the Minister of Industry, Trade and Investment, has said that the Federal Government was optimistic that the companies would perform better in the second half of the BIP after a disappointing performance during the first half of implementation.

2. Private Sector Investment

Large investments in the development of sugar cane plantations integrated with refineries suggest that private firms are responding to the incentives established by government policy. Nigeria's biggest sugar refining company, Dangote Sugar, spent USD1.5bn to develop cane plantations over 2013-2018. To this end, Dangote Group signed a deal to commence the construction of integrated sugar plants in six states in Nigeria, according to sugaronline.com and reported by Nigeria's Sundiata Post newspaper. Other companies, including BUA, **Flour Mills**, **Honey Gold Group**, **Crystal Sugar Mills** and **Confluence Sugar Coy**, are also investing in projects that will involve the development of local sugarcane plantations. Local media reports put the total invested in domestic sugar production since 2012 at USD2.6bn. Whether these investments translate into a revival of output will depend on the government's commitment to enforcing the BIP.

3. Infrastructural Weakness

Despite these positive intentions, major obstacles remain for the revival of the sector. The 2015 US Department of Agriculture Global Agricultural Information Network report claims that farmers may still be discouraged from increasing or even continuing their sugar production as they cannot find industrial buyers, resulting in massive post-harvest wastage. Industry analysts also indicate that local sugar refining firms are not able to site processing factories in major producing areas due to poor infrastructure, such as bad roads and electricity shortages. Refining raw imported sugar typically represents a more cost-effective option for private sector firms.

4. The National Sugar Master Plan

According to sugaronline.com and reports from Nigeria's Sun newspaper, the Federal Government has reviewed the National Sugar Master Plan (NSMP) as part of its ongoing move towards diversifying the local economy. The NSMP was established with the goal of promoting Nigeria's sugar industry on the world stage and increasing its share of the global sugar market. It covers a nine-year period from 2012 to 2020 and is the government's latest effort at ensuring that importation of sugar into Nigeria is reduced to a bare minimum and that the country reaches sugar self-sufficiency.

SUGAR PRODUCTION AND CONSUMPTION (NIGERIA 2017-2023)							
Indicator	2017e	2018e	2019f	2020f	2021f	2022f	2023f
Sugar market value, % of total	0.5	0.3	0.4	0.4	0.3	0.3	
Sugar production, '000 tonnes	75.0	80.0	81.0	82.0	85.0	86.0	87.0
Sugar production, % y-o-y	7.1	6.7	1.3	1.2	3.7	1.2	1.2
Sugar consumption, '000 tonnes	1,545.0	1,600.0	1,640.0	1,705.6	1,790.9	1,880.4	1,974.4
Sugar consumption, % y-o-y	19.8	3.6	2.5	4.0	5.0	5.0	5.0

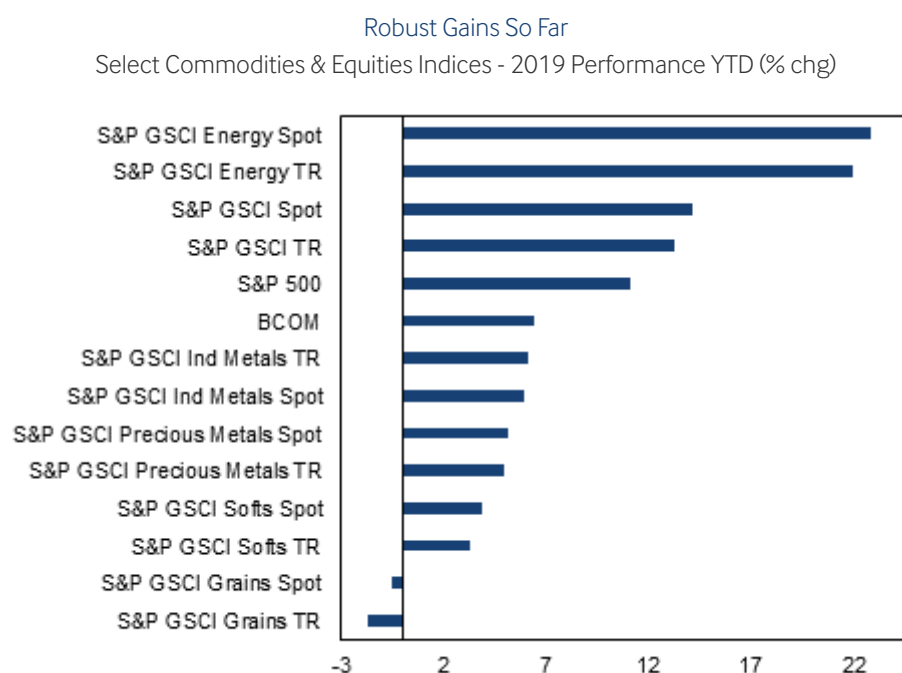
e/f = Fitch Solutions estimate/forecast. Source: Fitch Solutions, USDA, national sources

Commodity Price Analysis

Monthly Commodities Strategy: Further Upside Ahead For Commodities

Key Views:

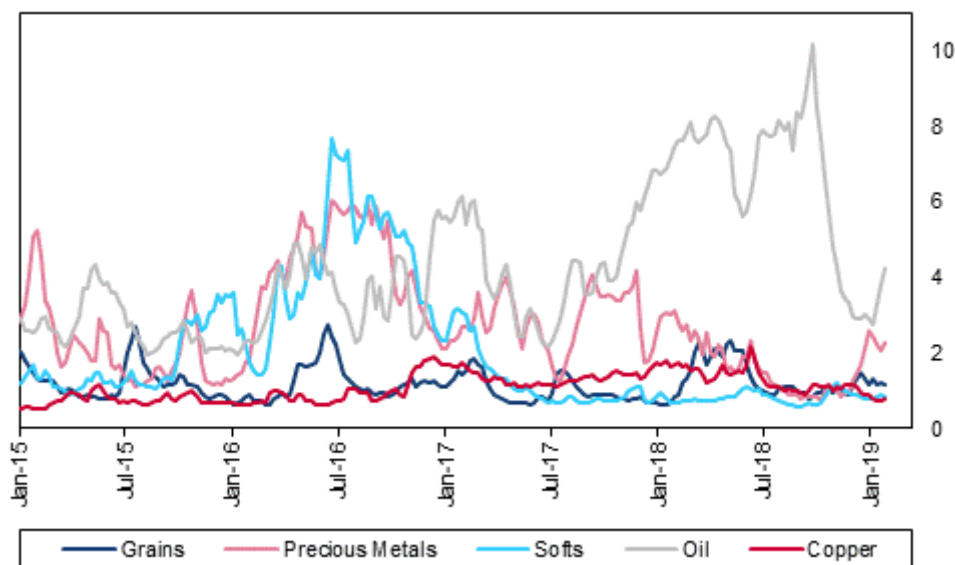
- We maintain our constructive view on commodities for 2019, as the macroeconomic conditions have improved in the year-to-date as compared with elevated concerns over growth in Q418, with the US Federal Reserve's more dovish stance.
- We see upside for copper and other non-ferrous metals, oil and most agricultural commodities (in particular palm oil, sugar, cotton, corn and soybean). Following good performance over recent months, gold prices will consolidate in the short term.
- However, we highlight that although economic and US-China trade tensions risks have taken a back seat over recent weeks, they remain very elevated and could impact commodities this year. The combination of geo-political risks and financial market volatility at a time when major economies will record a slowdown could drive swift changes in market sentiment for commodities.



Note: TR = Total Return. Source: Bloomberg, Fitch Solutions

The improving macroeconomic backdrop in February as compared with Q418 supports our constructive view on commodities. Commodity prices have started the year on strong footing, particularly oil, metals, gold and some softs (sugar, palm oil, APAC dairy). We maintain our constructive view on commodities for 2019, as macroeconomic conditions remain supportive. First, economic growth, although slowing, will remain relatively robust this year, with global GDP growth coming in at 3.0% in 2019, down from an estimated 3.4% in 2018. More importantly, the ongoing shift towards a more dovish monetary policy – especially the US Fed – will improve the appetite for risky assets including commodities. It will also add impetus to our neutral US dollar view for 2019. As a result, some of the macro headwinds that pressurised commodity markets in 2018, in particular a strong US dollar, are waning.

Bearish Positioning In Copper Suggests Further Upside Room For Prices Select Commodities - Speculative Positioning (Ratio Of Long To Short Positions)



Sources: Bloomberg, Fitch Solutions

Moreover, although economic activity will remain weak in the coming months in China, Fitch Solutions' Country Risk team expects the economic outlook to stabilise later in the year thanks to the continued supportive measures the government has been enacting over recent months, which will improve general sentiment towards commodities. These are focusing on investment and infrastructure projects, which will support China's metal demand this year (see *'China Metals Demand Tracker: Government Support Still Increasing'*, January 24).

COMMODITIES RISK MONITOR - FEBRUARY 2019

Upside Risks

US-China resolve the trade dispute, increasing economic activity in both markets. A limited resolution would most likely only improve global sentiment temporarily.

Stronger-than-anticipated economic growth (US, China) bolster sentiment and increase further the appetite for risk assets.

Oil - risks in key markets including Venezuela (political instability rises, risks of export disruptions), Iran (US declines to extend sanctions waivers in May, driving Iranian exports down towards zero), Nigeria (Unplanned outages rise ahead of 2019 presidential elections), Libya (instability is rising), IMO 2020 implementation boosting ST demand for diesel.

El Niño 2019 - The US's NOAA Climate Prediction Center declared in February that El Niño had arrived. Interestingly, the Australian Meteorology Department is not in El Niño alert yet, suggesting weather conditions may not be extreme in 2019. Moreover, although the NOAA expects a weak event, the phenomenon is unstable and may bring significantly drier and hotter weather in South/South East Asia, posing upside risks to sugar, palm oil, rice prices in particular.

Downside Risks

US-China trade dispute re-escalates and lingers on, undermining economic activity at a faster rate than we expect in both markets and globally.

Expectations of a US recession rise or China's economic growth slows down faster than we currently expect, dragging down sentiment towards commodities.

Hard Brexit - the potential of this scenario could appreciate the US dollar, pressuring commodities.

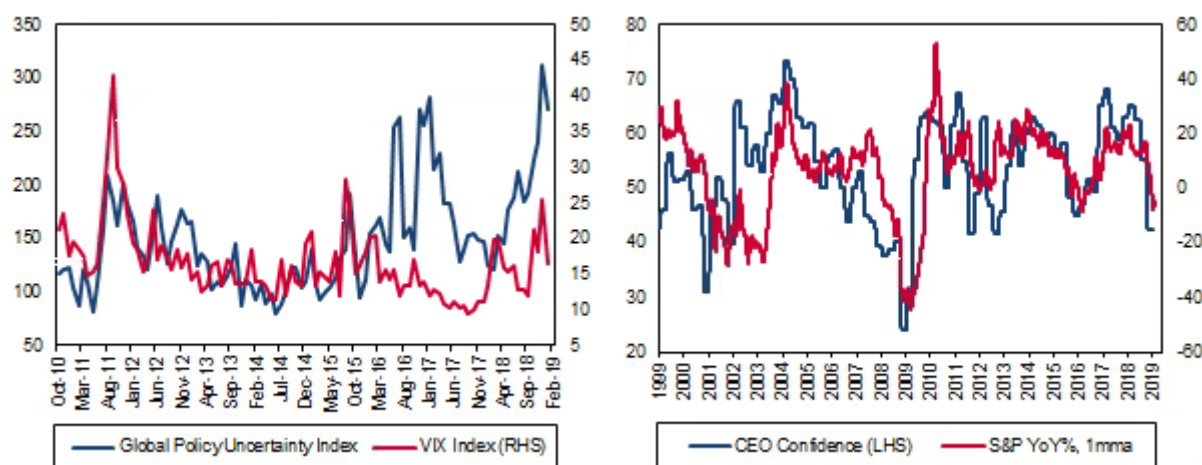
Oil - OPEC+ production cut deal unravels (next meeting is scheduled in April 2019).

Source: Fitch Solutions

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However, we highlight that although economic and US-China trade tensions risks have taken a back seat over recent weeks, they remain very elevated and could impact commodities this year. The combination of geo-political risks and financial market volatility at a time when major economies will record a slowdown could drive swift changes in market sentiment for commodities. In particular, the evolution of trade tensions between the US and China remain a key wildcard for commodities markets, which poses both upside and downside risks to prices (see table). The two countries are still negotiating a potential end to the trade tariffs in the coming months, we stress that they remain at odds on key strategic topics, which could still lead to a re-escalation of tensions in the future.

Volatility, Uncertainty & Weaker Sentiment Still Looming Risks
Various Economic Indices



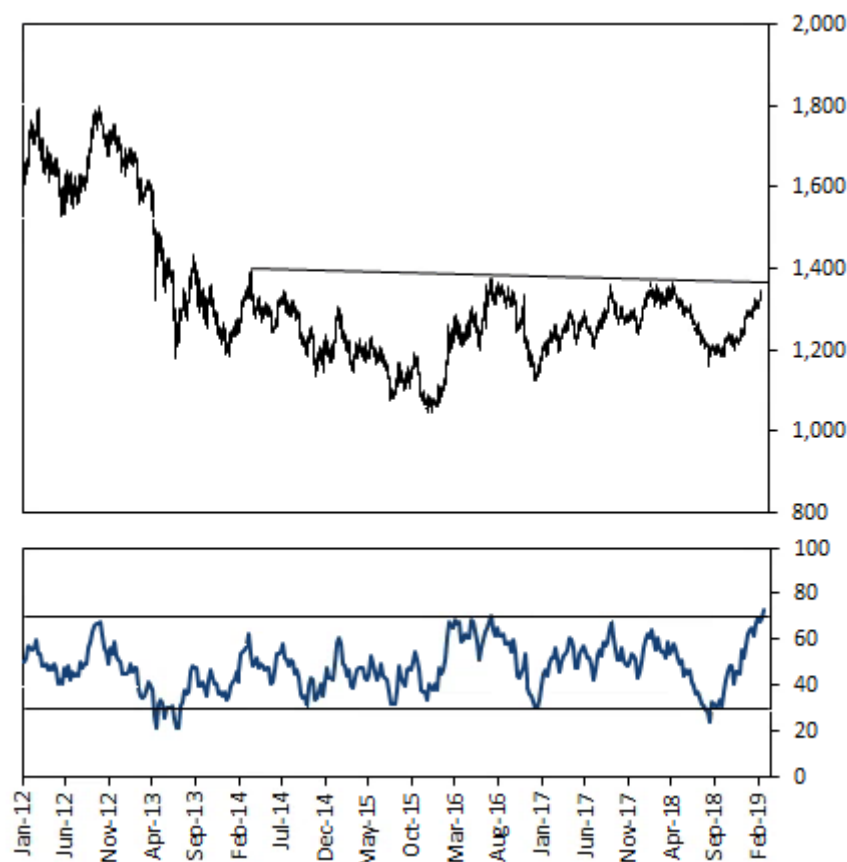
Source: Bloomberg, Macrobond, Fitch Solutions

Gold: Consolidation In The Short Term, Further Upside Down The Line

The bullish near-term view that we expressed in November played out, and we now have a neutral outlook on gold prices on a three-to-six month horizon. Looking at technical indicators, prices are approaching resistance and the weekly RSI is in overbought territory, suggesting limited upside in the short term. In terms of fundamentals, the dovish shift in US Fed language over the year-to-date has improved the outlook for gold prices, but we believe this development was priced in by the November-February rally. This view is bolstered by the fact that net speculative gold positions have already rebounded significantly from the bearish extreme that we highlighted back in November, reducing the potential for further short-covering in the coming months.

Consolidation In The Short Term

Spot Gold. USD/oz (weekly chart) & RSI (below)

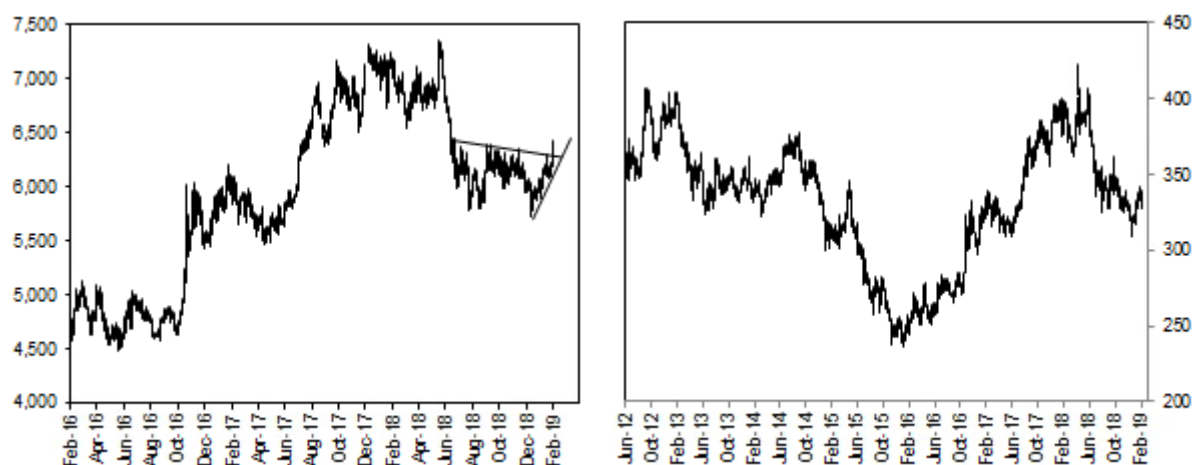


Source: Bloomberg, Fitch Solutions

We believe there is still some room for further price appreciation later in 2019 and in 2020 and maintain our price forecasts at USD1,300/oz and USD1,350/oz respectively (see 'Gold Prices: Maintaining Forecasts As Global Growth Slows', February 19).

Further Upside For Non-Ferrous Metals Ahead

LHC: Three-Month LME Copper (USD/tonne); RHC: S&P GSCI Industrial Metals Spot Index



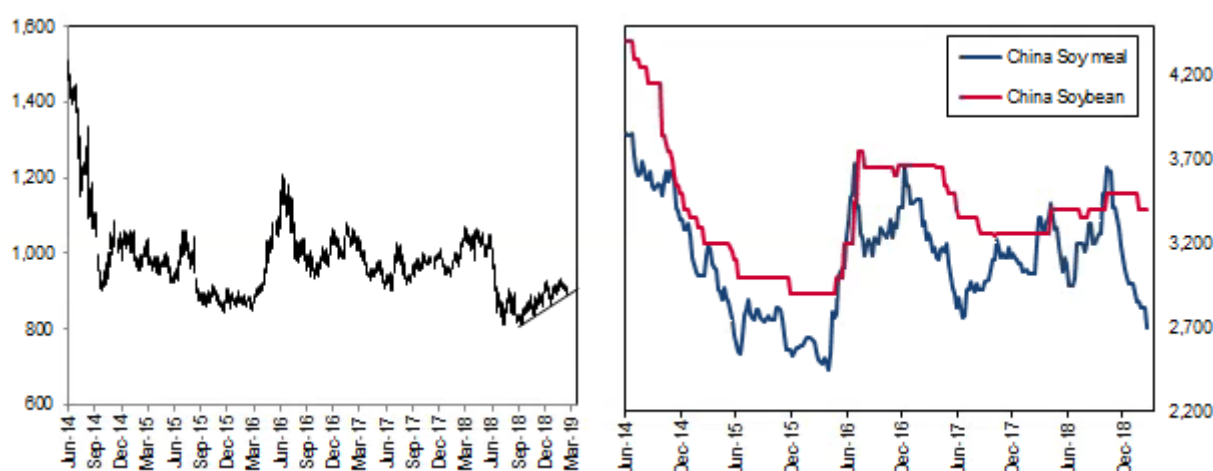
Source: Bloomberg, Fitch Solutions

Copper Grinding Higher

After a weaker start to the year compared with other metals, copper broke above resistance this week and we believe it will grind higher in the coming months. Our forecast for the year, at USD6,900/tonne, indicates plenty of upside room compared with current prices of USD6,319/tonne as of time of writing. Our positive view on copper prices took longer to play out than initially thought, as macroeconomic tailwinds in H218 outweighed tightening fundamentals. It appears the market is finally pricing in the positive fundamental factors at a time when risk-appetite is picking up as well.

China's Soy Market Appears Loose Despite Tariffs

LHC: Front-Month CBOT Soybean (USc/bu); RHC: Soymeal & Soybean Prices In China (CNY/tonne)



Source: Bloomberg, Fitch Solutions

Soybean: African Swine Fever Posing Downside Risks To Bullish Price Outlook

Our bullish view on soybean prices laid out in H218 at the heart of the US-China tensions and collapse in Chinese demand for US soy has played out as prices have appreciated by over 11% over September-February. We maintain our bullish outlook for benchmark soybean prices as trade tensions between the US and China have now been priced in, US farmers are rotating out of soybean and towards corn and wheat for Q119 plantings, and 2018/19 soybean plantings for Brazil were negatively impacted by dry weather. However, the ongoing African Swine Fever outbreak in China could significantly impact the big herd and undermine feed demand in 2019, posing downside risks to China's import demand. Local soybean and soymeal prices in China have remained relatively weak over recent months, despite anaemic total import demand, suggesting lacklustre domestic demand for soy.

FITCH SOLUTIONS COMMODITIES VIEWS				
COMMODITY SUB-GROUP	3-6 MONTH OUTLOOK	12-24 MONTH OUTLOOK	COMMENT	RECENT ANALYSIS
Oil	Neutral to Bullish	Bullish	We maintain a bullish outlook on crude over 2019. On the supply side, US shale continues registering strong growth. Nevertheless, the market is tightening, led by cutbacks by the OPEC+ group and US sanctions on Venezuela and Iran. Demand fears, we believe, are overdone. A more settled macroeconomic backdrop and continued oil demand growth will support prices and bolster sentiment over the coming quarters.	Brent: Scenarios For 2019', February 1. Bunker Fuel: IMO 2020 To Drive Huge MGO Upswing', February 7

COMMODITY SUB-GROUP	3-6 MONTH OUTLOOK	12-24 MONTH OUTLOOK	COMMENT	RECENT ANALYSIS
Non-Ferrous Metals	Bullish	Bullish	We expect base metal prices to edge higher over the coming weeks as strong fundamentals can now count on a more supportive macroeconomic backdrop in the coming weeks. Nevertheless a potential negative outcome to current trade negotiations between the US and China poses downside risks to that view. Our outlook remains positive from Q2 2019 onwards, as Chinese government support to the economy and an increasing number of infrastructure project approvals will provide tangible support to metals demand and add to the already tight fundamentals across the board.	Aluminium Prices: Positive Outlook Despite Downside Revision', January 30; Tin Prices: Maintaining Forecasts As Views Play Out', February 12
Ferrous Metals	Neutral	Bearish	Iron ore prices will remain elevated and volatile in the coming weeks, due to the aftermath on Brazil's iron ore supply outlook of Vale's recent dam rupture. However we believe most of the upside is behind us. High iron ore prices, coupled with robust fundamentals in China's steel market, will also support steel prices in the coming months.	Iron Ore Prices: Forecasts Revised Up Over Vale Dam Collapse', February 13
Precious Metals	Neutral	Bullish	With the bullish near-term view that we expressed in November having played out, we now have a neutral outlook on gold prices on a three-to-six month horizon. The dovish shift in US Federal Reserve (Fed) language over the year-to-date has improved the fundamental outlook for gold prices. Nonetheless, we expect that this development has largely been priced in by the 8.0% rally in gold prices since November 9 2018	Gold Prices: Maintaining Forecasts As Global Growth Slows', February 19
Grains	Neutral	Bullish	Grain prices will yield mixed results in 2019. We have revised down our wheat price forecast as most of the market tightness from the 2018 calendar year is behind us. Wheat production in the EU and the Black Sea region will rebound as they recover from the dry conditions of 2018. By contrast, we maintain our bullish outlook for benchmark soybean prices as trade tensions between the US and China have now been priced in, US farmers are rotating out of soybean and towards corn and wheat for Q119 plantings, and 2018/19 soybean plantings for Brazil were negatively impacted by dry weather. We have also revised up our corn price forecasts as we predict the global market to register large deficits over the coming years. This is largely due to record deficits in China as part of the country's recent data revisions.	Corn: Prices Revised Higher After China Data Revisions', February 8; Wheat: Forecasts Revised Lower As Long-Term Market Loosens', January 24
Softs	Bullish	Constructive	Softs have started the year on a positive note, in particular palm oil and sugar. Sugar prices will remain supported this year as the global supply outlook is worsening. We also see upside ahead this year for palm oil, coffee and cocoa. On the contrary, cotton prices have been weak over recent month, but we believe the downside is limited in the short term as the global market will be in deficit in 2018/19 and upcoming 2019/20 season.	Cotton: Forecast Hinging On Trade Tensions Outlook', February 14

Source: Fitch Solutions. Updated February 21, 2019

SELECT COMMODITIES - PERFORMANCE AND FITCH SOLUTIONS FORECASTS								
Commodity	Unit	Current Price	YTD (% Chg)	1 Year (% Chg)	2018 (ave)	YTD (ave)	2019f (ave)	2020f (ave)
Agriculture								
Class III Milk (Third-Month)	USD/cwt	14.50	-1.5	2.5	15.18	14.67	15.00	15.50
Cocoa (London)	GBP/tonne	1,749	-2.0	15.4	1,674	1,695	1,775	1,750
Coffee (Second-Month)	USc/lb	101	-3.4	-15.3	116	106	120	115
Corn (Second-Month)	USc/bushel	380	-0.9	1.5	378	386	400	428
Cotton	USc/lb	71	-2.8	-11.1	82.1	72.4	81.0	79.0
Feeder Cattle	USc/lb	144	-3.3	-4.0	147.1	144.1	na	na
Lean Hogs	USc/lb	53	-13.1	-23.4	65.2	58.9	na	na
Live Cattle	USc/lb	128	2.8	-1.5	114.4	125.9	na	na
Palm Oil (Third-Month)	MYR/tonne	2,243	5.7	-10.0	2,300	2,237	2,300	2,370
Rough Rice	USD/cwt	10	-0.7	-16.2	11.5	10.4	10.1	11.2
Soybean (Second-Month)	USc/bushel	915	2.2	-12.5	942	923	1,000	1,010
Sugar #11	USc/lb	13	11.7	0.6	12.24	12.76	12.60	13.80
Wheat (Second-Month)	USc/bushel	485	-4.9	5.6	509	519	500	495
Energy								
Coal, Thermal (Newcastle)	USD/tonne	95	-5.9	-7.8	101.4	97.4	85.0	88.0
Coal, Coking	USD/tonne	208	0.0	13.4	190.3	199.7	180.0	160.0
Brent Crude	USD/bbl	66	25.0	2.8	71.7	61.7	75.0	82.0
OPEC Basket, Oil	USD/bbl	66	27.6	4.6	69.78	na	72.0	79.0
WTI Crude	USD/bbl	56	26.5	-6.8	64.9	52.7	69.0	76.0
Natural Gas (HH)	USD/mnBtu	3	-9.9	-0.4	3.07	2.91	3.10	3.11
Natural Gas (NBP)	USD/mnBtu	6	-19.6	-18.8	7.88	7.11	7.97	7.04
LNG (Singapore SLING)	USD/mnBtu	6.0	-29.4	-40.6	9.35	7.26	8.0	7.5
Industrial Minerals & Metals								
Aluminium	USD/tonne	1,856	1.2	-14.5	2,114	1,872	2,150	2,200
Cobalt	USD/tonne	31,000	-43.6	-61.8	72,958	37,403	na	na
Copper	USD/tonne	6,319	7.4	-9.7	6,545	6,060	6,900	7,100
Iron Ore (62% CFR, Qingdao)	USD/tonne	84	20.7	14.3	66	76	75.0	65.0
Lead	USD/tonne	2,021	1.0	-21.4	2,248	2,031	2,350	2,350
Lithium	USD/tonne	13,250	-1.9	-8.6	14,761	13,250	na	na
Nickel	USD/tonne	12,660	20.7	-5.2	13,186	12,006	14,500	15,500
China Domestic Hot Rolled Steel Average	CNY/tonne	3,775	1.3	-8.1	4,123	3,747	na	na
Tin	USD/tonne	21,160	9.1	-0.6	20,068	20,621	20,500	21,000
Zinc	USD/tonne	2,657	9.4	-24.0	2,892	2,600	3,050	3,075
Precious Metals								
Gold	USD/oz	1,344	4.5	1.2	1,269	1,303	1,300	1,350

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Commodity	Unit	Current Price	YTD (% Chg)	1 Year (% Chg)	2018 (ave)	YTD (ave)	2019f (ave)	2020f (ave)
Palladium	USD/oz	1,463	22.2	43.1	1,021	1,322	na	na
Platinum	USD/oz	830	4.2	-16.8	880	808	na	na
Silver	USD/oz	16	3.1	-3.6	16	16	na	na

Note: All mineral and metals prices except steel, iron ore and lithium refer to generic third-month contracts. All energy and agricultural prices refer to generic front-month unless otherwise stated. Source: Bloomberg, Fitch Solutions. Updated February 21, 2019

Upstream Analysis

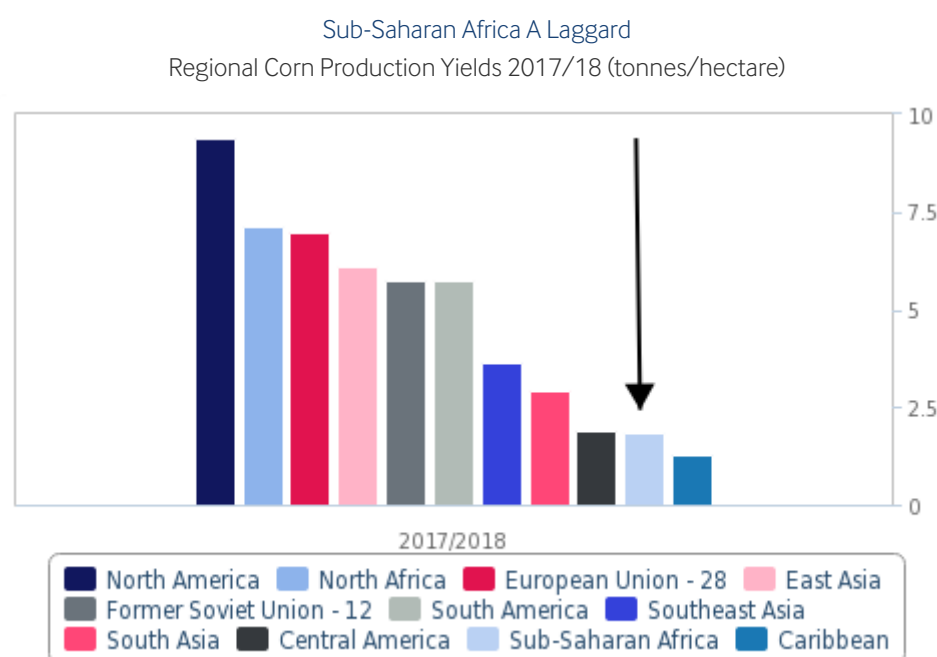
Africa GM Outlook

Key View: Uptake of GM and biotech in Africa will increase gradually over the coming years, despite structural challenges and institutional deficiencies. Seed varieties not destined for human consumption, such as cotton, will drive GM adoption. We expect South Africa to remain the leading country on the African continent for GM use and development, but other countries, especially in East Africa continue to show signs of regulatory liberalisation.

Consistently Poor Yields

African countries have experienced serious food shortages in the past two decades and have historically faced domestic production deficits about every three years. The continent's agricultural yields are very low by global standards and crops are highly dependent on weather patterns, with heavy rains often leading to outbreaks of disease for vulnerable crops such as cocoa, while prolonged episodes of dryness have dire consequences on grain crops.

In the 1990s, South Africa was the first country in Africa to commercialise the biotech production of cotton, maize and soybean, and the country was followed by Burkina Faso (cotton), Sudan (cotton) and Egypt (corn and cotton). South Africa is, by some distance, the largest user of genetically modified (GM) crops in Africa and the ninth largest producer of GM crops in the world. The country had a biotech crop production area of 2.7mn hectares (ha) in 2016, up from 2.3mn ha in 2015.

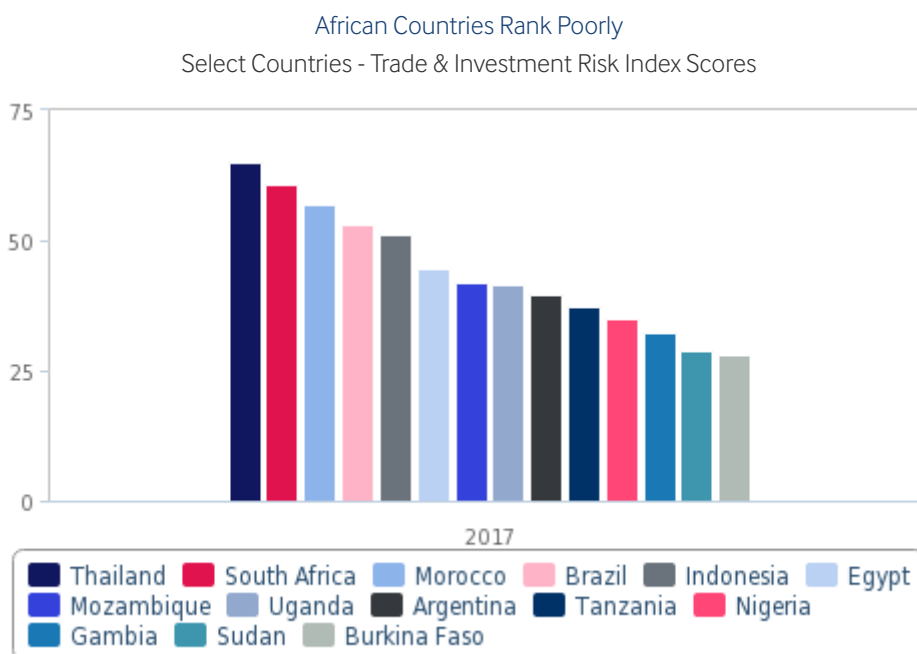


Source: USDA, Fitch Solutions

Long-Running Structural Problems

GM use across other parts of Africa will remain comparatively low (relative to other regions) over the coming years owing to structural problems across the African agricultural sector. Farmers on the continent have difficulty building savings or acquiring credit for expensive inputs, such as GM seeds and machinery. Profitability in the sector remains poor, due to low yields and inadequate infrastructure. A large portion of farming on the continent can be characterised as subsistence farming, as opposed to

commercial-scale farming. Smallholders make up 80% of farmers in SSA, with many living from one harvest to the next. African farming will have to move away from subsistence agriculture and become more profitable in order to support a thriving GM sector. We believe that partnerships with food companies, the development of cooperatives and greater access to credit are three of the most important strategies the sector could adopt in order to achieve greater profitability (see 'Africa GM Outlook', May 28 2015).



Source: Fitch Solutions

Limited Policy Cohesion

Another major barrier to GM seed growth in the continent is the lack of agreement between African nations. According to the New Economic Partnership for Africa's Development (NEPAD), one of the major reasons for the lack of wide-scale GM adoption is the absence of functional regulatory systems, both domestically and across the continent. Although only three countries in SSA (South Africa, Burkina Faso and Sudan) currently plant GM crops commercially as of 2017, a number of countries are conducting field trials.

However, little cohesion exists in policy decisions. According to the NEPAD African Biosafety Network of Expertise, only 24 African countries had some form of biosafety regulation as of 2016. Uganda has been conducting field trials without biosafety laws, while Nigeria previously did the same before passing a biosafety law in 2015. Kenya had previously authorised field trials for GM corn but the government cancelled all tests in March 2017 and stated that the country was not yet ready for such experimentation. Various reports suggest that the Kenyan government supports a GMO-free status for the country, further highlighting the disjointed nature of GM use in Africa.

One of the greatest points of contention over GM use in Africa is the control of first-generation seeds. First-generation seeds are patented by seed companies and are allowed to be used for only one season before farmers have to purchase new seeds for the following year. Using seeds derived from the resulting crops for the next season is, therefore, illegal. According to the US Department of Agriculture, 80% of African farmers currently reuse seeds from the previous crop. Consequently, patent rights will prove to be a major obstacle for GM companies in Africa.

Disparate GMO Status In Africa
Africa - 2018 GMO Status By Country



Notes: Countries labelled as 'Biosafety Laws' are not doing any field trials. Apart from Uganda, all countries labelled as 'Field Trials' have biosafety laws in place. Finally, all countries labelled as 'Commercial GMO' have biosafety laws in place. Data for most countries as of 2017, but incorporates 2018 developments where available. Source: African Biosafety Network of Expertise (ABNE), Fitch Solutions

Adapting GM Technology To Africa Will Support Uptake

We believe that there is great potential for GM uptake by African farmers if the technology adapts to their needs and budgets. Developments over the last five years in GM varieties for crops such as sorghum and cassava, which are a staple crop in many African countries, will help to promote the technology on the continent. Nevertheless, the greatest successes will be achieved through close cooperation with local stakeholders, such as African scientists and farmers collaborating on improving local strains to adapt to changing conditions.

The continent's traditionally firm opposition to GM technology appears to be easing as a growing number of countries are conducting field trials or improving their regulatory frameworks on GM crops. The extensive drought that hit the southern part of SSA in 2015 and eastern part in 2017 and which continues to weigh on the region's food security has the potential to accelerate a change in mindset. Countries in southern SSA such as Zimbabwe, which enforces a ban on GM imports, could be forced to authorise imports of GM food over the coming months as an extraordinary measure to alleviate food security threats.

ONGOING DEREGULATION OF GM IN SUB-SAHARAN AFRICA

Country	Recent developments	Pending approval
Ghana	Commercial release of Bt cowpea envisaged in 2019, in partnership with Nigeria.	Sweet Potato (nutrient enhanced), Rice (nitrogen-use efficient, water-use efficient, salt tolerant - NEWEST), Cowpea (Bt) Cotton (Bt), Cotton (stacked traits)
Ethiopia	There has been efforts to increase domestic cotton production and commercialisation of Bt cotton has been approved in 2018. The government has also authorised confined field trials for Bt drought-resistant corn.	Cotton (Bt)
Côte d'Ivoire	National Biosafety Law was approved in 2016.	na
Burkina Faso	Cotton (Bt) has been commercialised in Burkina Faso but is not being planted due to an unresolved dispute with Monsanto regarding fibre lengths.	Cotton (Stacked Bollgard II and Roundup Ready Flex, ie, insect and herbicide tolerance), Cowpea (Bt - insect resistance to Maruca Vitrata), Maize (Bt)
Senegal	Is updating its national biosafety law.	na
Tanzania	Has revised the strict liability clause in its Environment Management Biosafety Regulations. It began conducting GM research trials in 2016.	Maize (drought-tolerance - Water Efficient Maize for Africa), Maize (pest-resistant), Cassava (tolerant to Cassava Mosaic Disease and Cassava Brown Streak Disease)
Nigeria	Signed a biosafety bill and established the National Biosafety Management Agency in 2015.	Cowpea (Bt), Cotton (Bt), Sorghum (Bio-fortified), Rice (nitrogen-use efficient, water-use efficient, salt tolerant - NEWEST), 'Super Cassava' (fortified with Vitamin A)
Mozambique	Now in a position to start research trials of GM crops after having approved amendments to the Biosafety Regulations at the end of 2014. The country began its first GM corn field trial in February 2017.	Maize (drought-tolerance - Water Efficient Maize for Africa)
Kenya	GM-Gypsophila cut flowers now seem most likely to move forward to open field trials, given widespread enthusiasm to pioneer this new variety on the world market. Plans are also underway for Bt corn open field trials, while commercialised Bt cotton is expected to commence in 2018.	Maize (drought-tolerance - Water Efficient Maize for Africa), Cotton (insect-resistant), 'Super Cassava' (fortified with Vitamin A), Cassava (tolerant to Cassava Mosaic Disease and Cassava Brown Streak Disease), Sorghum (enhanced pro-Vitamin A levels, bioavailable Zinc and Iron), Sweet Potato (resistance to Sweet Potato Virus Disease), Gypsophila Flower (pink colour flower stability)

Note: Regulations as of mid-2018. Source: USDA

Patchy Potential Over Coming Years

We expect continued progress to be made first and foremost in products that are not intended for human consumption (such as cotton or cut flowers) and in countries where the regulatory approval process is most developed (South Africa, Kenya and Ethiopia).

We believe that cotton offers the greatest growth opportunities for seed firms in Africa over the next few years, despite cotton already being the continent's main GM crop and promising results from drought-resistant grain seed trials. Many of the nations that are conducting GM field trials (such as Nigeria, Uganda and Ethiopia) are major cotton producers, relative to the size of their agricultural industries. Nigeria is conducting field trials of GM cotton, but social unrest has been significant. A number of civil society groups have marched against the government and protested against the potential commercialisation of the GM cotton crop in the

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future.

In May 2015, Ethiopia relaxed its strict policy on GMOs and will look to use GM seeds commercially by 2019, with confined field trials ongoing. Ethiopia is a major producer of cotton in Africa and the Ethiopian textile and apparel industry is considered a key sector for the country's economic development. However, the industry's growth is outpacing domestic cotton production, making it dependent on imports and impeding its development. The introduction of GM seeds in 2019 (the 2018 approval came too late to be used for the 2018 season) could fill this shortfall. In contrast, wide opposition to human consumption of GM crops will ensure that policy bottlenecks remain over the coming years, which underpins our view that GM cotton to outperform other crops.

Africa Machinery Outlook

Key View: The outlook for the agricultural sector in SSA is looking more positive over the coming quarters as financial conditions improve slightly and harvests improve; however, structural constraints will prevent a considerable increase in regional machinery sales. We believe countries in Southern Africa and North Africa will remain the key markets for agricultural machinery companies on the continent over the next five years. The dependence of African farmers on support from governments and multinationals will keep future prospects contingent on wider economic development across the continent.

Starting From A Low Base

The agricultural mechanisation rate in Sub-Saharan Africa (SSA) is the lowest in the world. According to the Food and Agriculture Organization (FAO) and the European Agricultural Machinery Association, roughly 65% of land preparation is done manually by labourers in SSA compared with around 40% in East Asia, 30% in South Asia and 25% in Latin America and the Caribbean. South Africa, Morocco and Algeria traditionally dominate Africa's new tractor sales market, accounting for a large portion of the continent's total sales per year; however, more than 80% of these are light machinery of less than 100 horsepower and are two-wheel drive. In another example, Algeria counted 140 tractors per 100sq km of arable land in 2008 compared with 271 in the US and fewer than seven in Nigeria.

HOW AFRICA COMPARES WITH OTHER REGIONS				
Region	Cereal Yield (kg/ha)	Fertiliser Use (kg/ha)	Irrigation (% of arable land)	Tractors (per 1,000ha)
Africa	1,040	13	5	28
Selected comparable countries	3,348	208	38	241

Note: Africa excludes Egypt and Mauritania. Selected countries are Bangladesh, Brazil, China, India, South Korea, Pakistan, the Philippines, Thailand and Vietnam. Source: World Bank 2007, Fitch Solutions

South African Sales Remain Positive

Three major dynamics would need to materialise in order for agricultural machinery sales to pick up across most of Africa over the coming years. These are:

- Higher farm incomes, mainly resulting from high commodities prices and good harvests
- Positive financial conditions, such as low real interest rates and better access to credit
- Favourable exchange rates as African nations continue to rely on imports of agricultural equipment

On the basis of these three criteria, we expect subdued agricultural equipment sales growth across Africa over the coming quarters as weakening growth in farm incomes (as regional food prices remain broadly subdued) are compounded a gradual winding down of monetary easing (see 'Fitch Solutions: Sub-Saharan Africa Key Themes For 2019', December 18 2018). One exception to this has been South Africa where a weakening rand has increased export competitiveness and has to an extent mitigated falling regional grain prices. Indeed, South African tractor sales increased 4% year-on-year in 2018, while combine sales were up by 1.5% over that time.

Stable Rand Helping Sales
South Africa - Exchange Rate, ZAR/USD (weekly)

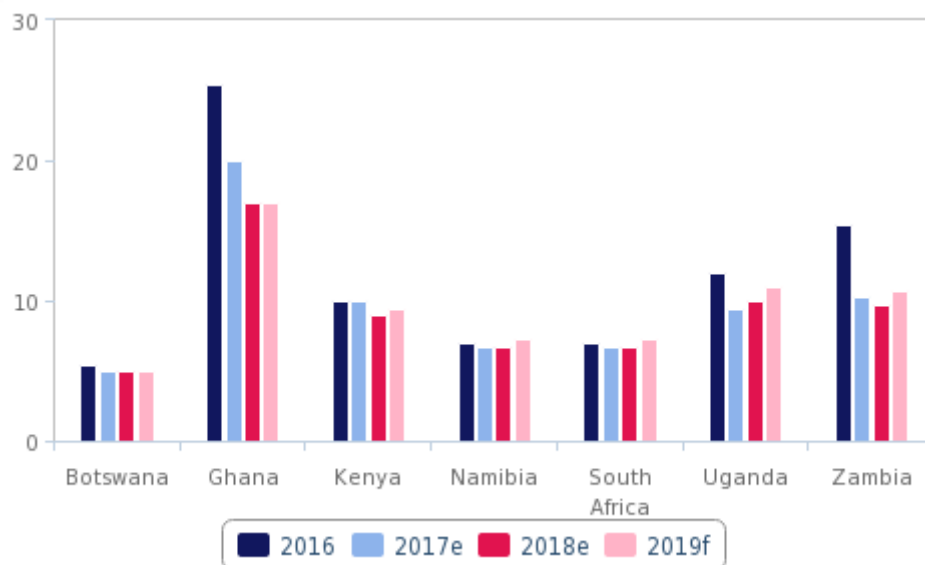


Sources: Bloomberg, Fitch Solutions

Individual farm financing is virtually non-existent in many SSA countries. The FAO has stated that a 'lack of finance is the overwhelming reason why farmers cannot purchase machinery'. For example, after his re-election in December 2017, Kenyan President Uhuru Kenyatta announced a big four agenda aimed at modernising the Kenyan economy; however, there appears to be no indication of any enhanced financial support for farmers, let alone for machinery purchases (see *'Implementation Of Big Four Agenda Will Face Headwinds'*, June 29 2018).

Although such financing will remain difficult to acquire, we expect overall Sub-Saharan growth to continue to accelerate, to 3.5% in 2019—up from 2.6% in 2018, and a multi-year low of 1.5% in 2016, and the strongest growth seen since 2014. Growth will be driven by East Africa in particular, with real GDP in the East & Central Africa sub-region set to expand by an average of 5.6% in 2019 up from 4.8% in 2018. This growth will be supported by a variety of factors, including robust investment into development. However, expansion in major economies including South Africa and Nigeria is likely to prove disappointing. In particular, growth in West and Southern Africa will also be sustained by a modest rebound in Nigeria and South Africa respectively, although in both cases growth will remain well below historical levels, reflecting ongoing policy uncertainty and fiscal constraints (see *'Sub-Saharan Growth To Accelerate In 2019 But Long-Term Constraints Remain'*, January 23).

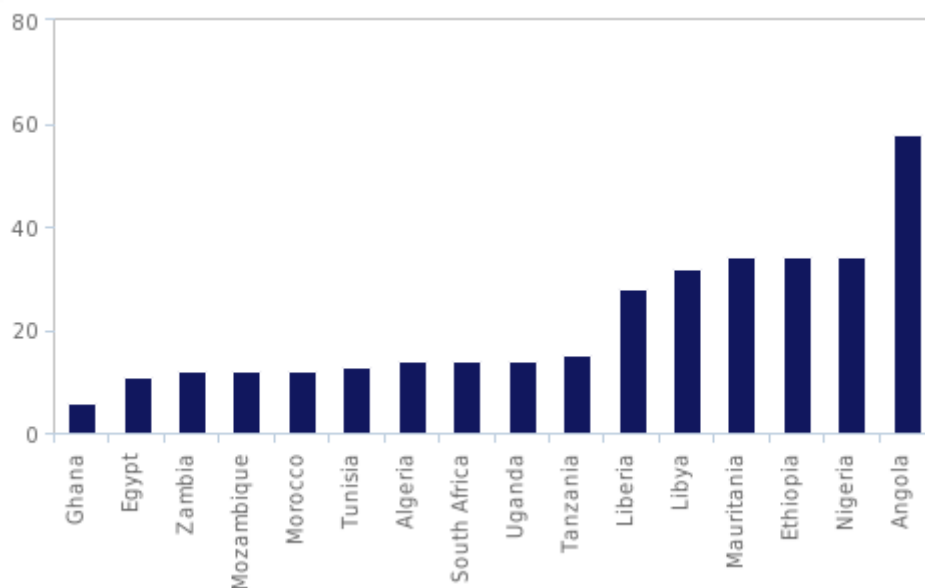
Rate Outlooks Stabilising
SSA (Selected Economies) - Central Bank Policy Rate, %



f = Fitch Solutions forecast. Source: National Sources, Fitch Solutions

Despite the improvement in East Africa, we believe that countries in Southern Africa and North Africa will remain the key markets for agricultural machinery companies in Africa over the next five years. We expect these regions - already the continent's largest grain producers - to see the strongest growth in corn and wheat production between 2017/18 and 2022/23. The outlook for the region's currencies will also have an impact. Overall, SSA currencies will see moderate depreciation in the coming quarters following broad sideways trading in recent months. Moreover, for some currencies (including the South African rand, the Tanzanian shilling, the Kenyan shilling and the Zambian kwacha) the risks are heavily skewed to the downside, with potential for greater-than-anticipated US monetary tightening or rising domestic political risk to spur sharper-than-expected sell-offs. For example, low-level instability has been a persistent risk in the Great Lakes Area - broadly defined as Burundi, the Democratic Republic of the Congo (DRC), Kenya, Rwanda, Tanzania and Uganda - but we foresee a sharp uptick in instability in 2019. In the long term, our Country Risk team forecasts the currencies of Egypt, Ghana and Morocco to perform relatively strongly against the US dollar over the coming years compared with the continental average.

Ghana And Zambia Outperforming
Select Countries - Exchange Rate Depreciation Against USD, 2017-2022f (cumulative %)



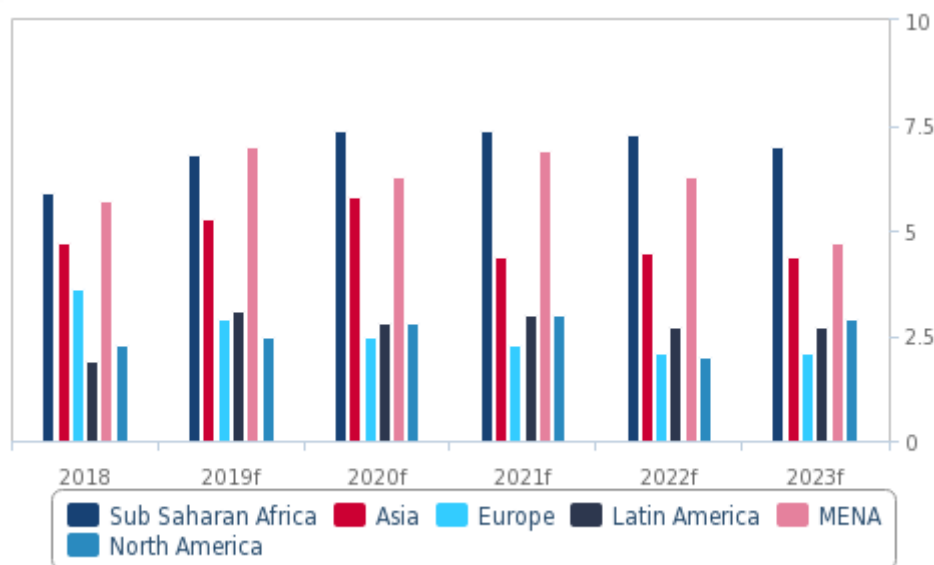
Note: A negative number implies currency appreciation against the USD; f = forecast. Source: Fitch Solutions

Key Players Expanding Presence In Region

The competitive landscape of the African agricultural machinery market will remain largely stable over the coming quarters owing to the lasting structural impediments we have outlined above. India-based tractor companies, such as **Mahindra & Mahindra** (M&M) and **Sonalika**, will see solid results in Africa as their products are better suited to the continent's current agricultural industry climate. This is because Indian companies mainly produce lighter tractors in line with Africa's small-scale farming and local farmers' limited budgets. In October 2017, M&M announced that it will set up new production sites in Durban, South Africa which will begin operations in mid-2018. Around the same time, M&M also set up an office in Cairo, its first in North Africa and its fourth in Africa.

AGCO announced in early 2016 that they are planning on increasing sales in Africa by 20% annually over the coming years after adding new capacity on the continent during that time. Specifically, the company built new facilities in South Africa, Algeria and Zambia. AGCO's key focus in terms of sales will be the Democratic Republic of the Congo and Egypt. Ethiopia – which is slowly trying to modernise its farming system through the use of exchanges and subsidies – is also a target market for the company. The company reiterated its commitment to Africa in its 2018 annual report, stating that it is 'establishing a greater manufacturing and/or marketing presence...[and] expanding [its] use of component suppliers.'

SSA In Pole Position
Construction Sector Growth By Region, % y-o-y



Fitch Solutions

Infrastructure Outlook Improving

A number of African governments and multinational agricultural machinery companies have tried to improve mechanisation rates through significant investment of capital in recent years. Our view is that these efforts will ultimately have limited success unless inherent institutional problems are addressed and other input use develops. In order to increase profitability in African agriculture, we believe that three primary goals need to be achieved: partnerships with food companies, the development of cooperatives and greater access to credit.

Similarly, investment in sectors strongly linked to agricultural equipment will be needed if the sector is to thrive in the coming years. The development of infrastructure, such as roads, ports, power and finance, will be necessary for sustained growth in the agricultural equipment sector. We are becoming more positive about SSA. Specifically, the SSA region will see the second fastest construction industry growth of all regions globally over the next five years, particularly driven by strong growth from 2020 when the region will pass the Middle East and North Africa region as the global growth leader. While key markets such as South Africa will continue to lag behind the regional average, a strong project pipeline and pressing infrastructure needs across the region will keep growth elevated on a global comparison with a number of markets (including Ethiopia, Rwanda and Cameroon) set to outperform (see 'SSA Construction Growth Moving Into Top Spot', April 18 2018). As of the end of 2018 this view is playing out, and we have revised up our growth forecast for the region in 2018 from 6.1% y-o-y to 6.6% y-o-y, a significant acceleration on the 4.43% y-o-y growth recorded in 2017 (see 'Sub-Saharan Africa Infrastructure: Key Themes 2018 Mid-Year Review', June 13 2018).

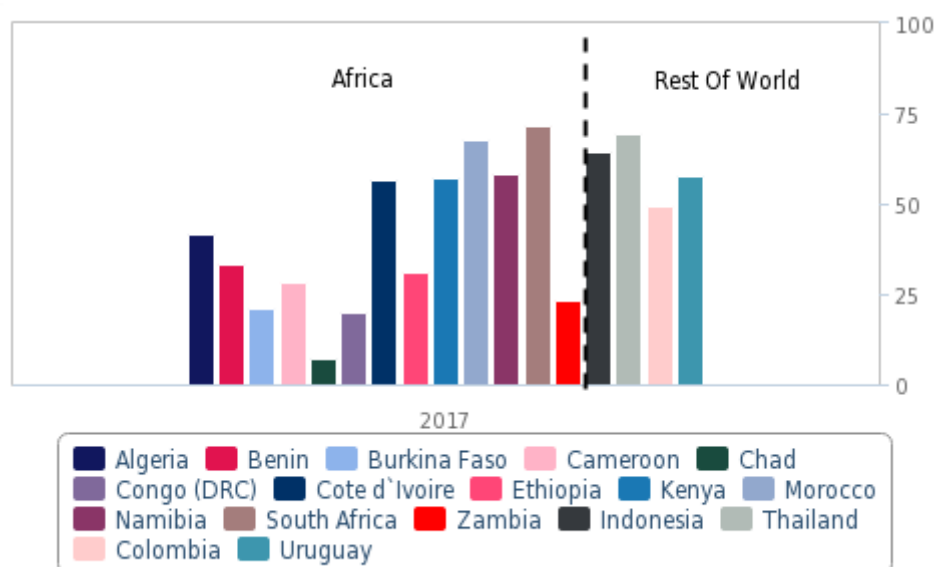
Africa Fertiliser Outlook: Improving Short-Term Consumption Outlook

Key View: Low farm income levels and structural barriers will continue to constrain fertiliser consumption growth in Africa over the long term. Consumption growth, however, will receive a short-term boost from low fertiliser prices. Sub-Saharan African countries will see new projects coming online in the coming years, while consumption will grow at a superior rate to other global regions.

Africa and the Middle East are minor consumers of fertiliser, accounting for just 3.9% of world consumption in 2014, according to the International Fertilizer Association (IFA). Global fertiliser application rates are around 100kg/hectare. By contrast, in Africa, these levels are around 10kg/ha. Moreover, consumption is highly concentrated among a handful of countries, with farmers in other countries applying very limited amounts of fertiliser. In Sub-Saharan Africa (SSA), five countries (Ethiopia, Kenya, Nigeria, South Africa and Zambia) have accounted for almost two-thirds of consumption. In the Middle East and North Africa (MENA), three countries (Egypt, Iran and Morocco) account for three-quarters of consumption.

We highlight a key discrepancy between SSA and the MENA region. MENA has comparatively limited agricultural production, due to a scarcity of arable land and volatile growing conditions, but does have elevated production and capacity of nitrogen and phosphate. In contrast, SSA has vast amounts of arable land and extensive agricultural production (albeit with low yields) but, until now, has had very limited fertiliser production – apart from South Africa.

Poor Transport Network Increases Cost Of Imported Fertilisers In Africa
Select Countries - Transport Network Index



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Structural Factors Keep Regional Per Capita Consumption Low

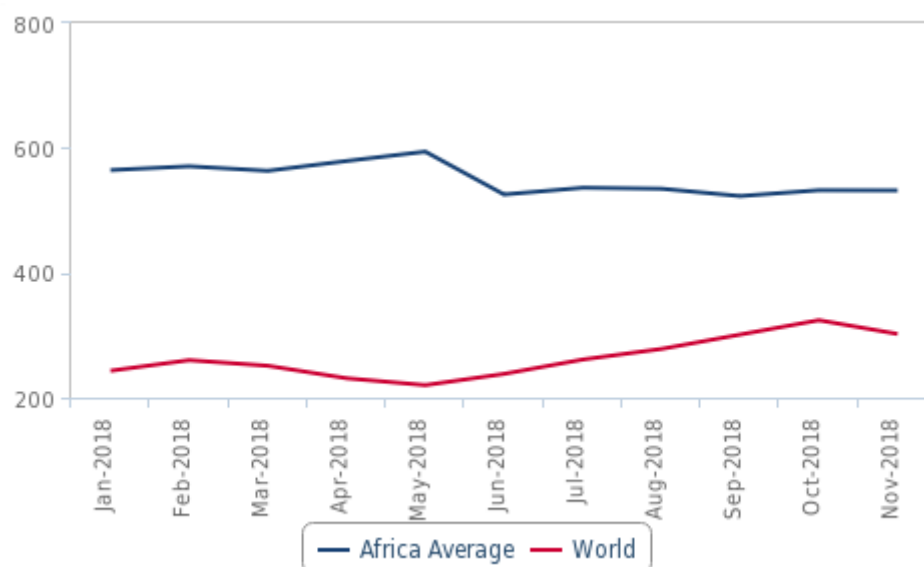
Despite fertiliser consumption coming from a very low base across much of Africa, we believe that it will not reach similar levels to Europe and South America until institutional problems are addressed. Many of these are similar to those that we have highlighted in previous analyses - namely poor profitability in the sector and the dominance of small-scale, subsistence agriculture (see '*Africa Machinery Outlook*', October 19 2017). Moreover, we highlight logistics, as well as the lack of mobile technologies, storage availability and costs as key impediments to the development of the African fertiliser industry.

While the cost of fertiliser itself is similar for African and non-African countries, high transport costs and taxes result in inflated prices in Africa. Roads and ports in many regions of Africa are of a poor quality, frequently congested and costly to use due to numerous

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checkpoints. Infrastructure across most of the continent is poor. Therefore, it is no surprise that most large fertiliser-using countries in SSA have access to the coast. Furthermore, the distribution process passes through a number of middlemen, resulting in higher costs and ultimately deterring consumption. Farmers in Kenya (inland), for example, pay almost twice as much for fertilisers as farmers in Europe according to the (Kenya) Standard. According to AfricaFertilizer, average Urea prices across 15 countries in the 12 months up to August 2018 averaged around USD500/tonne, more than double benchmark Urea prices.

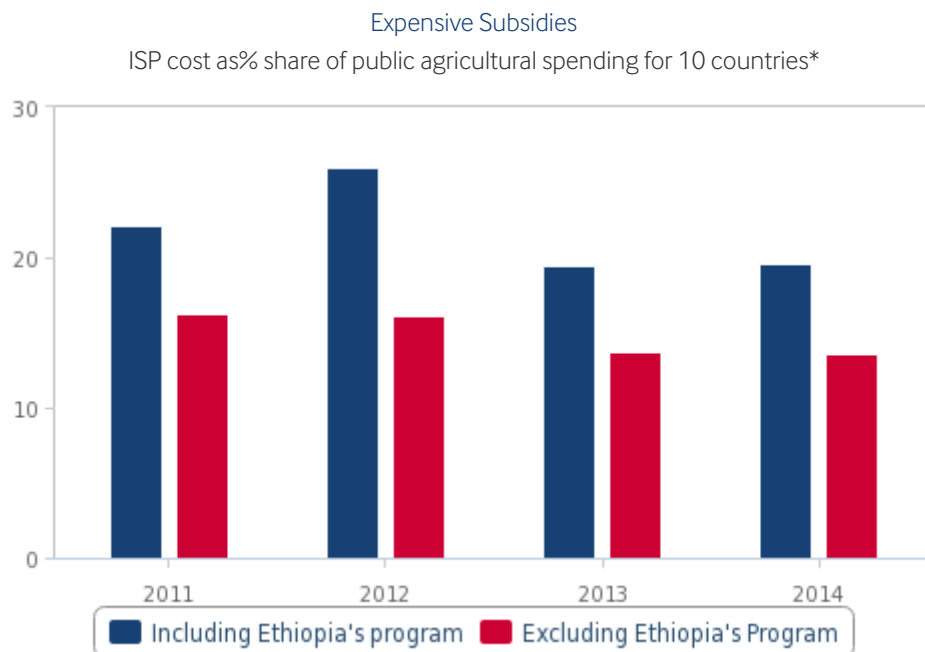
African Fertilisers At A Premium
Select Countries - Urea Prices (USD/ton)



Source: AfricaFertilizer, Fitch Solutions

The traditional scarcity of fertilisers available to SSA farmers supports illegal fertiliser trade across the region, with issues including cross-border smuggling of subsidised fertilisers as well as the sale of counterfeit fertilisers. Moreover, international fertiliser companies often refrain from entering partnerships with local ministries to supply subsidised nutrients due to frequent delays in payments, which reinforce the position of illegal fertiliser traders. At the end of the supply chain, inadequate storage facilities mean that cost-effective amounts of fertiliser cannot be regularly purchased, resulting in substantial wastage.

We believe that significant improvements in physical and financial infrastructure will need to be made in many African countries before fertiliser consumption approaches developed market levels. Indeed, although our Infrastructure team sees strong growth potential in transport infrastructure among SSA countries, this is unlikely to improve the fertiliser trade in the coming years. Moreover, investors will remain cautious in their exposure to SSA infrastructure investments, owing to the challenging operational environment, various macroeconomic headwinds, poor access to electricity and underdeveloped financial markets.



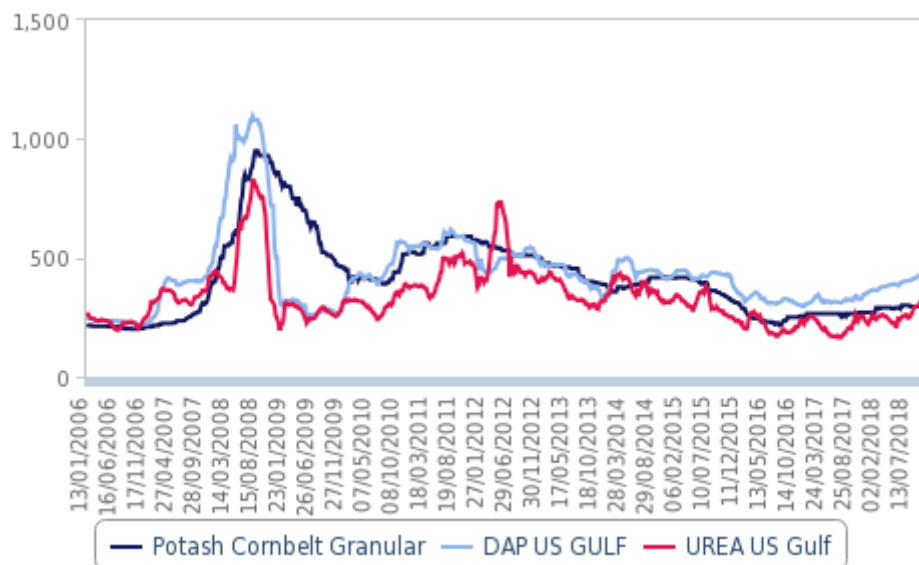
Note: Ethiopia market prices from EATA are substantially lower than market prices elsewhere in the region, which is taken into account in the authors calculations; Sources: Jayne et al, Fitch Solutions

Many SSA countries had subsidy programmes until the 1990s. These government programmes, through which farmers receive fertiliser at below-market prices, were largely phased out during that time because the emerging consensus was that they only marginally contributed to improved yields. However, after African governments committed to raising expenditures on agriculture under the 2003 Maputo Declaration, many countries re-introduced them. In recent years, total expenditures on ISPs by these 10 countries have ranged from approximately USD600mn to USD1bn annually and accounted for roughly 14-26% of their combined annual public expenditures on agriculture. However, according to Jayne et al (2018), 'overall crop production and welfare effects of these subsidy programs tend to be smaller than expected.'

Low Prices Prompt Short-Term Consumption Optimism

Although the aforementioned structural factors will constrain long-term consumption in SSA, short-term consumption growth has outperformed, with regional consumption growing by 15% annually from 2015 until 2017 compared to just 2% globally. Nigerian consumption alone doubled in 2017 to 1mn tonnes, while Ethiopian consumption increased by 43% over the same period. On the trade front, OCP Group – a Moroccan state-run phosphate monopoly – saw exports of phosphate-based fertiliser increase by over 50% y-o-y in H117, while exports to SSA more almost tripled between H115 and H117, with the destinations including Nigeria, Ethiopia and Kenya. Much of this is reflected in low phosphate prices, which we believe will remain subdued over the coming months. We expect the region's broad trend of strong consumption growth to continue over the coming quarters. Fertiliser markets will remain mostly oversupplied in 2018 as production will continue to rise, in spite of low prices, while consumption growth will be moderate. Ultimately, consultancy CRU predicts that Africa's annual fertilizer consumption is expected to reach 13.6mn tonnes of nutrient by 2030 from 7.6mn tonnes in 2017.

Robust African Demand Despite Rising Prices
Fertiliser - Select Prices (USD/short ton)



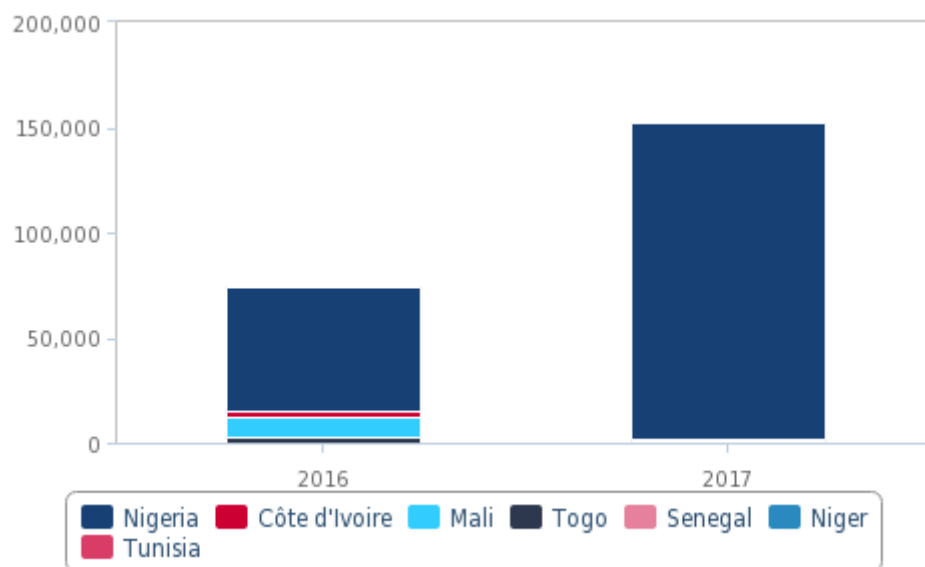
Note: 'Potash' = Green Market Fertilizer Potash Cornbelt Granular Spot Price; 'DAP' = Green Market Fertilizer DAP US Gulf NOLA Spot Price; 'Urea' = Green Market Fertilizer UREA US Gulf NOLA Granular Spot Price. Source: Green Markets, Bloomberg, Fitch Solutions

On a global level, low crop prices, weak farmers' profitability and a moderate crop production growth environment will not be conducive for a strong pickup in fertiliser demand, keeping prices anchored. Grain prices have been slightly firmer over recent months, but barring a significant weather disruption, will remain low over most of 2018, compared with historical averages. It will take several years for global markets to rebalance, particularly in the case of potash and phosphate, as these two markets will see a significant increase in capacity over the next few years. On a short-term basis, this will be positive for African imports. However, with food prices falling considerably in both Eastern and Southern Africa in recent quarters (after a strong run-up due to droughts), the pace of the import growth seen in recent quarters will slow considerably.

Production Opportunities Exist As New Plants Come Online

We hold a favourable view on fertiliser producers in the MENA region over the coming years, while production growth will improve in SSA as well, given the number of various new projects coming online. Access to ample reserves of natural gas and phosphate rock at a cheap cost in comparison with competitors in North America, Asia and Eastern Europe underpins our expectations for solid performance from fertiliser companies based in the MENA region. We highlight OCP Group, which has exclusive access to the country's phosphate reserves, as an example of this trend, as the company is the world's largest exporter of phosphate products.

Nigeria Leading The Way
West African Urea Fertiliser Exporters (tonnes)



Sources: TradeMap, Fitch Solutions

We now hold a more positive view on the near-term prospects for fertiliser production in SSA, especially regarding nitrogen based fertilisers. Over recent years, companies from Israel, China, Canada, Morocco and Indonesia have announced plans to develop resources in countries such as Togo, Guinea-Bissau, Gabon, Uganda and Senegal. More recently, Yara announced that it was looking into creating a USD2bn construction facility in Mozambique.

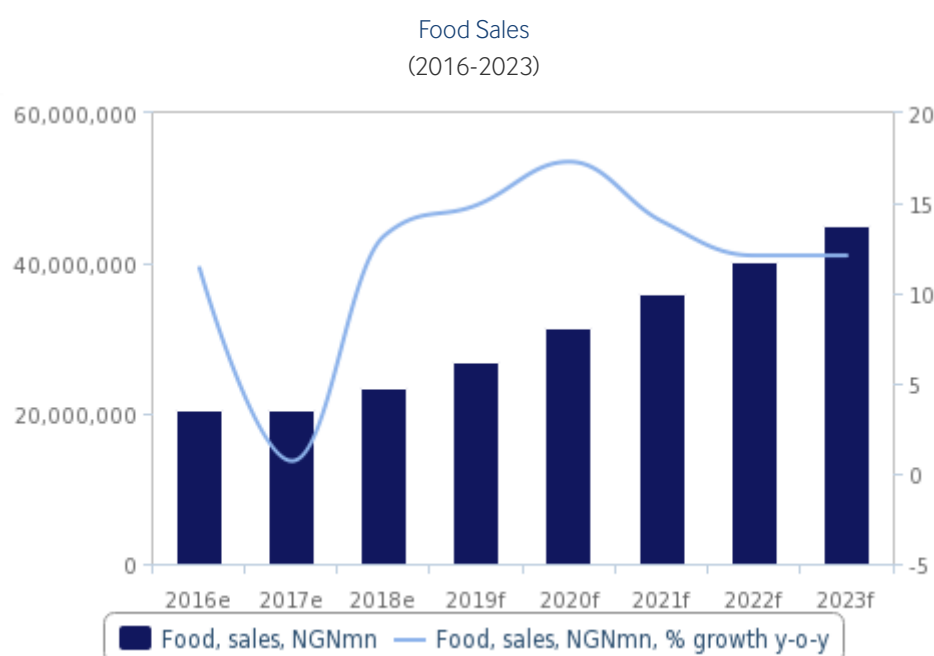
Industry Forecast

Food

Key View: Higher prices will be a key driver of food spending over the 2019-2021 period with inflation in double-digits over this three-year period at around 12.1% compared to average food sales growth of 15.4% during the same time period. Over the latter half of our forecast period, 2022-2023, inflation will drop to 8% and consumer purchasing power will improve, with food spending averaging 12.1% during these two years. We expect to see staples such as bread, rice, cereals, pasta, meat, poultry, oils and fat all set to outperform over our forecast. Non-staple goods, which typically come at a higher price point, such as sugars, fruit and baked goods will underperform in this weak consumer environment.

Latest Updates

- During 2019, total food sales will expand by 14.9% in local currency terms, up from 13.2% in the previous year.
- Over the medium term (2019-2023) we forecast that total food sales will expand by an annual growth rate of 14.1% each year (in local currency terms).
- Bread, rice and cereals along with meat and poultry sales will be the strongest growing categories, averaging local currency annual average growth rates of 16.3% and 19.8% respectively, during our forecast period.
- Oils and fats will also see strong growth of 21.0% over the next five years.
- Amid a still difficult consumer situation, the sales of non-essential food products, such as confectionery or sugar products, are expected to underperform.



e/f = Fitch Solutions estimate/forecast. Source: National statistics, Fitch Solutions

Structural Trends

Over 2019, we forecast food consumption to come in at 14.9% in both local currency and USD terms. Despite an improving economic outlook, Nigerian consumers will face a tough 2019 on the back of still high inflation, which is expected to average 12.4% over the year. This means that much of the growth expansion in food spending is being driven by higher inflation and prices, rather than higher consumer demand. Weak labour market dynamics have resulted in high unemployment and underemployment, which will continue to dampen household spending growth. Food sales will reach NGN45.1trn in 2023 (about USD110bn), up from NGN27trn in 2019 (USD87.7bn).

As double-digit inflation will continue to weigh heavily on consumption, we will see certain food categories outperform while others decline. In particular, we expect staple foods to remain resilient while non-essential food items will show a tepid performance, with bread, rice and cereals showing impressive growth. Agriculture is a large sector within the Nigerian economy, but despite this, Nigeria is heavily reliant on imported food, spending around NGN1.3trn on food imports annually. The oil-dependent country will continue to face economic headwinds during 2019 that will result in further currency weakness. A weak naira has translated into accelerating food prices, whereby imported food inflation has exceeded core inflation. The government is working on reforms to encourage domestic investment in the agricultural sector, including a potential buy-back scheme and investment/management of silos, but these plans are in the very early stages.

In our current forecasts, we expect rice and bread to demonstrate strong growth as consumers shift their diets towards filling carbohydrates. Additionally, this category will remain resilient throughout our forecast period. Pasta products will be another outperformer, due to the rising popularity of noodles in Nigeria. The convenience of short cooking times and relative affordability are driving the category's popularity. The confectionery category will underperform over our forecast period as cash-strapped consumers reduce non-essential expenditure.

The strength of these categories will attract investment into domestic food production. For example, on January 12 2016, **Olam International** purchased two flour mills and a pasta-making plant from **BUA Group** for USD275mn. This purchase was preceded by the purchase of **Crown Flour Mills** in 2010. Olam has also been investing in expanding its plants in a bid to increase output. According to Olam, once renovations are complete at one of its pasta-making plants, daily output will double for both pasta products and flour.

Following a strong rebound in sales during 2018-2020, meat sales are expected to show robust growth rates throughout the remainder of the forecast period to 2023. Poultry, along with ham and bacon, will be the fastest growing categories within this subsector. Oils and fats are forecast to grow rapidly also, averaging annual growth of 21% to 2023.

While Nigeria's huge domestic market gives it great potential, we expect that the same infrastructure, labour and business environment issues that have discouraged the development of other light manufacturing industries will limit the efforts to boost local production of processed and value-added foods over our forecast period.

FOOD SALES (NIGERIA 2016-2023)								
Indicator	2016e	2017e	2018e	2019f	2020f	2021f	2022f	2023f
Food, sales, NGNm	20,484,992.2	20,635,392.6	23,359,661.3	26,831,688.1	31,486,585.0	35,909,888.2	40,247,777.1	45,120,105.1
Food, sales, NGNm, % growth y-o-y	11.4	0.7	13.2	14.9	17.3	14.0	12.1	12.1
Bread, rice and cereals, sales,	7,931,403.3	8,089,205.6	9,400,516.7	11,064,417.7	13,293,987.2	15,470,154.7	17,633,791.4	20,039,038.8

Indicator	2016e	2017e	2018e	2019f	2020f	2021f	2022f	2023f
NGNmn								
Bread, rice and cereals, sales, NGNmn, % growth y-o-y	14.3	2.0	16.2	17.7	20.2	16.4	14.0	13.6
Pasta products, sales, NGNmn	232,706.3	232,830.9	255,643.1	284,813.3	321,870.7	355,584.1	387,026.5	421,662.7
Pasta products, sales, NGNmn, % growth y-o-y	8.3	0.1	9.8	11.4	13.0	10.5	8.8	8.9
Baked goods, sales, NGNmn	49,866.3	48,157.6	50,170.3	52,296.4	54,492.9	55,949.6	56,652.0	57,092.5
Baked goods, sales, NGNmn, % growth y-o-y	0.5	-3.4	4.2	4.2	4.2	2.7	1.3	0.8
Meat and Poultry, sales, NGNmn	2,674,694.0	2,689,860.6	3,216,639.6	3,929,387.7	4,915,633.7	5,879,740.6	6,835,395.3	7,931,642.9
Meat and Poultry, sales, NGNmn, % growth y-o-y	17.0	0.6	19.6	22.2	25.1	19.6	16.3	16.0
Fish and fish products, sales, NGNmn	1,554,229.1	1,524,840.6	1,620,757.1	1,746,249.3	1,904,270.8	2,039,418.9	2,159,285.6	2,290,680.4
Fish and fish products, sales, NGNmn, % growth y-o-y	4.8	-1.9	6.3	7.7	9.0	7.1	5.9	6.1
Dairy, sales, NGNmn	423,242.0	436,161.7	480,207.6	518,007.9	565,901.1	611,475.9	655,929.0	705,960.1
Dairy, sales, NGNmn, % growth y-o-y	9.8	3.1	10.1	7.9	9.2	8.1	7.3	7.6
Oils and Fats, sales, NGNmn	2,010,740.2	2,024,357.2	2,456,256.7	3,043,148.4	3,860,217.4	4,662,851.0	5,461,509.3	6,379,809.1
Oils and Fats, sales, NGNmn, % growth y-o-y	18.7	0.7	21.3	23.9	26.8	20.8	17.1	16.8
Fresh and preserved fruit, sales, NGNmn	306,079.4	285,053.7	282,402.3	282,255.1	283,425.3	280,405.7	274,923.3	269,673.5
Fresh and preserved fruit,	-2.0	-6.9	-0.9	-0.1	0.4	-1.1	-2.0	-1.9

Indicator	2016e	2017e	2018e	2019f	2020f	2021f	2022f	2023f
sales, NGNmn, % growth y-o-y								
Fresh vegetables, sales, NGNmn	4,699,176.8	4,702,735.1	4,954,808.2	5,220,430.3	5,540,398.2	5,762,049.8	5,952,289.1	6,154,049.1
Fresh vegetables, sales, NGNmn, % growth y-o-y	5.6	0.1	5.4	5.4	6.1	4.0	3.3	3.4
Sugar and sugar products, sales, NGNmn	190,784.4	189,965.6	190,928.4	189,534.5	182,347.4	171,325.9	157,259.2	138,845.5
Sugar and sugar products, sales, NGNmn, % growth y-o-y	1.3	-0.4	0.5	-0.7	-3.8	-6.0	-8.2	-11.7
Other food products, sales, NGNmn	412,070.4	412,224.1	451,331.4	501,147.6	564,040.2	620,932.0	673,716.3	731,650.5
Other food products, sales, NGNmn, % growth y-o-y	8.1	0.0	9.5	11.0	12.5	10.1	8.5	8.6

e/f = Fitch Solutions estimate/forecast. Source: National statistics, Fitch Solutions

Regional Overview

Five Key Themes For Middle East And Africa Agribusiness

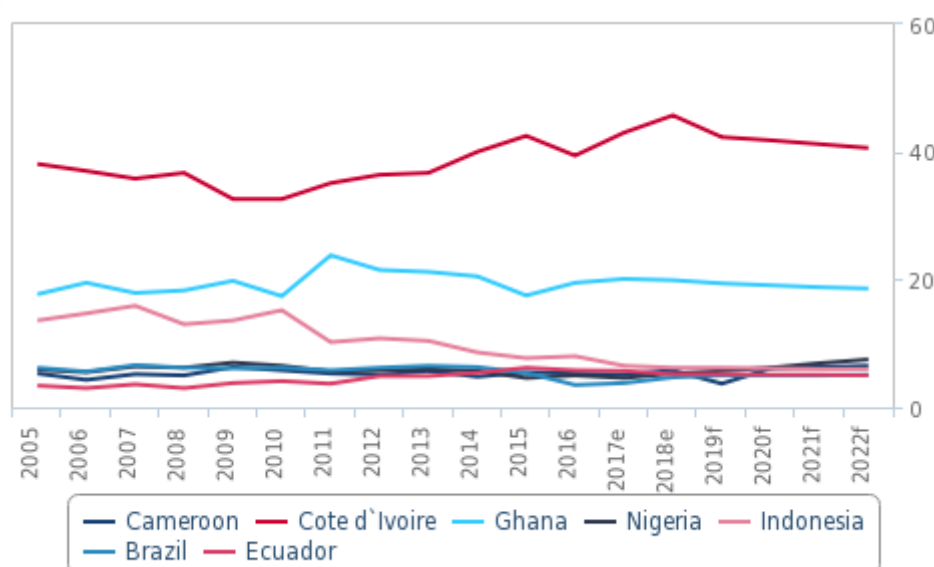
Key View

- An OPEC-like collaboration between the two largest cocoa producers – Ghana and Côte d'Ivoire – will unlikely have a significant impact on the industry in the medium term.
- Despite land expropriation becoming official party policy in South Africa, we believe unused or underutilised land will likely be the subject to land expropriation rather than productive farmland, agricultural output will, therefore, remain largely unaffected. Capital flight, however, is still a key risk.
- GM seed usage and fertiliser consumption in Africa has strong potential, but the uptake will be inconsistent.
- Increasingly challenging environmental conditions will further heighten risks to political stability in Sub-Saharan Africa over the coming years.
- The sugar deficit in Africa will widen as low international prices, the loss of the EU market and disappointing growth in regional consumption provide few incentives to invest.

1. 'Cocoa Cartel' To Have Limited Impact, Smuggling To Remain A Risk

In a bid to regulate global cocoa production levels and increase returns to local producers, Ghana and Côte d'Ivoire have agreed to harmonise cocoa prices and other marketing and industry activities. Though the countries' influence on global supply and international trade is substantial, various structural barriers will inhibit their ability to manipulate the cocoa market. The countries export cocoa beans which are shipped elsewhere for processing, operate different marketing systems, consist of widely dispersed scattered smallholder farms, and have a limited infrastructure, making coordination difficult. (see *'Ghana And Côte D'Ivoire 'Cocoa Cartel' Will Have A Limited Impact' September 26*). Local cocoa producers will therefore still be vulnerable to international price volatility. Discrepancies between Ivorian and Ghanaian farmgate prices will encourage smuggling between the two countries (see *'Increased Smuggling Threatens Long-Term Production Growth' March 6*).

Ghana & Côte d'Ivoire Losing Market Share
Select Countries - Cocoa Production (% of global)



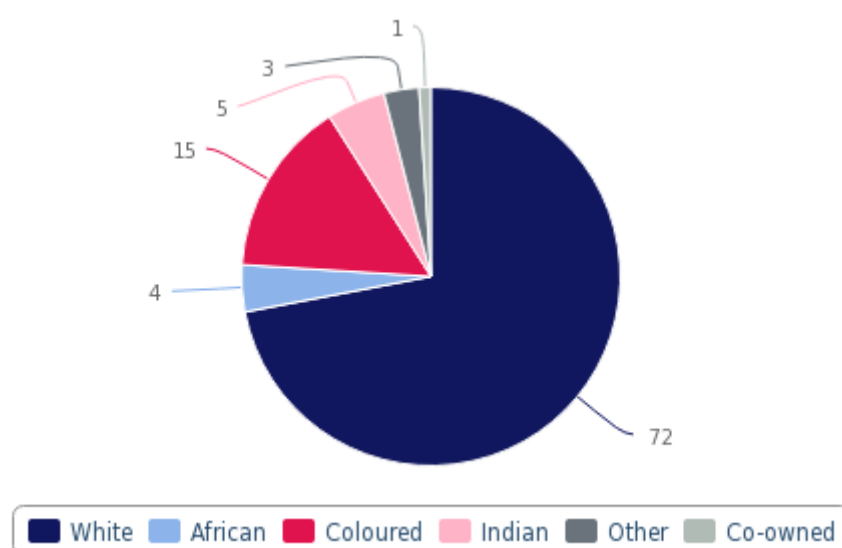
Source: ICCO, Fitch Solutions

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2. Land Expropriation Threat To South African Agriculture Is Overblown But Capital Flight Still A Risk

Land policy uncertainty remains a key risk that could potentially undermine investment and long-run growth prospects in the South African agribusiness sector. Although we believe that the country's controversial land 'expropriation without compensation' (EWC) policy will unlikely result in aggressive Mugabe-style land grabs, and President Cyril Ramaphosa will more likely favour practical solutions (see '*Land Expropriation Threat To South African Agriculture Is Overblown*' July 23), we note that the lack of clarity on this issue is weighing on investor sentiment. Investor concerns over EWC have already resulted in falling land prices, which fell by 32.0% from December 2017 and July 2018, according to national sources. In the short term this will further constrain farmers' access to inputs, especially for corn planting which began in October 2018, as farmers often use farmland as collateral when seeking credit to finance operations. In the long term, there is risk that the perceived violation of property rights will lead to capital flight. In an attempt to sooth investor concerns, Ramaphosa recently created a ten person panel to advise on the policy, announced as part of his economic stimulus plan (see '*Heightened Agribusiness Policy Uncertainty In South Africa Threatening Production Rebound*' October 9).

Whites Own Majority Of Land Despite Being A Minority
South Africa – Agricultural Land Ownership By Race (% total area)



Source: Department of Rural Development and Land Reform, Fitch Solutions

3. Input Usage In Africa Is Mixed

Uptake of GM and biotech in Africa will increase gradually over the coming years, despite structural challenges and institutional deficiencies. Seed varieties not destined for human consumption, such as cotton, will drive GM adoption. We expect South Africa to remain the leading country on the African continent for GM use and development, but other countries, especially in East Africa continue to show signs of regulatory liberalisation (see '*Africa GM Outlook - Increased Potential But Patchy Implementation*' September 29). Long-term African fertiliser use, by contrast, will be constrained owing to low farm income levels and structural barriers. In the short term, however, fertiliser consumption will be supported by base effects and low international fertiliser prices (see '*Africa Fertiliser Outlook: Improving Short-Term Consumption Outlook*' September 3).

ONGOING DEREGULATION OF GM IN SUB-SAHARAN AFRICA

COUNTRY	RECENT DEVELOPMENTS	PENDING APPROVAL
Ghana	Commercial release of Bt cowpea envisaged in 2019, in partnership with Nigeria.	Sweet Potato (nutrient enhanced), Rice (nitrogen-use efficient, water-use efficient, salt tolerant - NEWEST), Cowpea (Bt) Cotton (Bt), Cotton (stacked traits)
Ethiopia	There have been efforts to increase domestic cotton production and commercialisation of Bt cotton has been approved in 2018. The government has also authorised confined field trials for Bt drought-resistant corn.	Cotton (Bt)
Côte d'Ivoire	National Biosafety Law was approved in 2016.	na
Burkina Faso	Cotton (Bt) has been commercialised in Burkina Faso but is not being planted due to an unresolved dispute with Monsanto regarding fibre lengths.	Cotton (Stacked Bollgard II and Roundup Ready Flex, ie, insect and herbicide tolerance), Cowpea (Bt - insect resistance to Maruca Vitrata), Maize (Bt)
Senegal	Is updating its national biosafety law.	na
Tanzania	Has revised the strict liability clause in its Environment Management Biosafety Regulations. It began conducting GM research trials in 2016.	Maize (drought-tolerance - Water Efficient Maize for Africa), Maize (pest-resistant), Cassava (tolerant to Cassava Mosaic Disease and Cassava Brown Streak Disease)
Nigeria	Signed a biosafety bill and established the National Biosafety Management Agency in 2015.	Cowpea (Bt), Cotton (Bt), Sorghum (bio-fortified), Rice (nitrogen-use efficient, water-use efficient, salt tolerant - NEWEST), 'Super Cassava' (fortified with Vitamin A)
Mozambique	Now in a position to start research trials of GM crops after having approved amendments to the Biosafety Regulations at the end of 2014. The country began its first GM corn field trial in February 2017.	Maize (drought-tolerance - Water Efficient Maize for Africa)
Kenya	GM-Gypsophila cut flowers now seem most likely to move forward to open field trials, given widespread enthusiasm to pioneer this new variety on the world market. Plans are also underway for Bt corn open field trials, while commercialised Bt cotton is expected to commence in 2018.	Maize (drought-tolerance - Water Efficient Maize for Africa), Cotton (insect-resistant), 'Super Cassava' (fortified with Vitamin A), Cassava (tolerant to Cassava Mosaic Disease and Cassava Brown Streak Disease), Sorghum (enhanced pro-Vitamin A levels, bioavailable Zinc and Iron), Sweet Potato (resistance to Sweet Potato Virus Disease), Gypsophila Flower (pink colour flower stability)

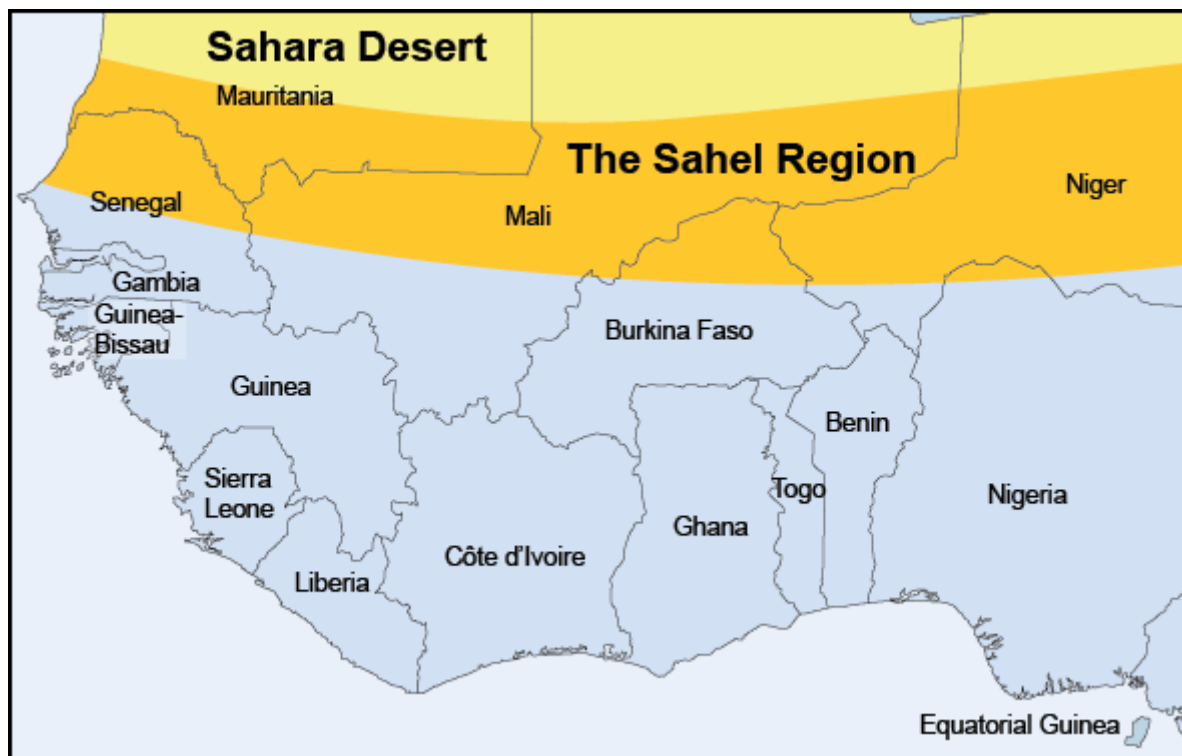
Note: Regulations as of mid-2018. Source: USDA

4. Environmental Pressures To Elevate Long-Term Political Risk

Increasingly challenging environmental conditions, including a greater likelihood of more extreme weather conditions, will further heighten risks to political stability in Sub-Saharan Africa over the coming years. Here we examine two of the most vulnerable regions, which were chosen based on a combination of their significant exposure to the effects of environmental volatility and their already high levels of political instability. One area we examine is the western part of the Sahel region, where we believe that already weak states will be vulnerable to desertification and drought, weighing on social stability and security risks. The other at-risk area we highlight is the Nile Basin, where we maintain that more erratic rainfall and a rapidly increasing population will strain water supplies and worsen extant international tensions (see 'Environmental Pressures To Elevate Long-Term Political Risk', February 22).

Sahel Region Vulnerable To Environmental Risks

The Sahel



Source: Fitch Solutions

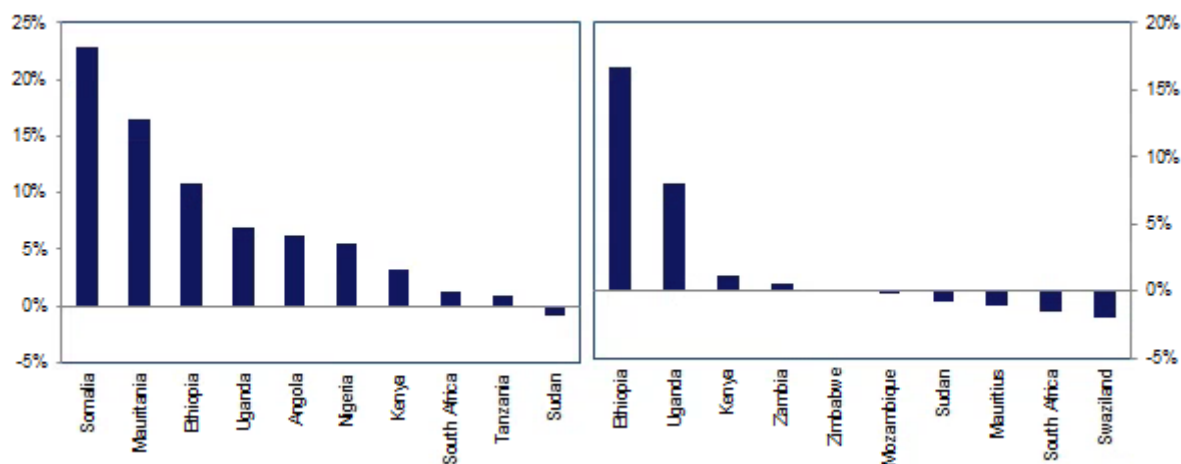
5. African Sugar Producers To Struggle Following EU Quota Lapse

The sugar deficit in Africa will widen as low international prices, the loss of the EU market and disappointing growth in regional consumption provide few incentives to invest. Governments of sugar-producing countries will, instead, focus on protecting their small internal markets from import competition. Ethiopia is the main exception to this trend and is expected to become a major sugar exporter over a five-year horizon to 2022. We forecast shrinking surpluses and increasing deficits in sugar for most Sub-Saharan countries over a three-year horizon, in line with the historical trend. Production is expected to remain stagnant for the following reasons:

- African exports to the EU market are at risk of being displaced now that EU production quotas lapsed in September 2017, as several African producers are uncompetitive with European producers of beet sugar.
- Domestic sales will not cover the difference, as potential demand is currently masked by elevated local prices.

Those with the most exposure to the European market, and limited growth opportunities at home, are forecast to be worst affected. This includes Mozambique, Zimbabwe and Swaziland. South Africa, by contrast, expects to utilise only 75% of its 150,000-tonne export quota to the EU in 2017/2018 and will focus on supplying the domestic and regional markets in future (see 'African Sugar Producers To Struggle Following EU Quota Lapse', July 25 2017).

African Sugar Deficits Will Widen
Sugar Consumption (LHS) & Production (RHS), % y-o-y, 2013-2017



Note: The figures above represent the 10 largest consumers of sugar (70% of African consumption) and the 10 largest producers of sugar (78% of African production) in Africa.
Source: USDA

Competitive Landscape

Nigeria Agribusiness Competitive Landscape

MAIN AGRIBUSINESS PLAYERS						
Company	Sub-Sector	Market Capitalisation (USDmn)	Fiscal Y/E	Revenue (USDmn)	Three-Year Average Revenue Growth (%)	Operating Margins (%)
Nestle Nigeria	Processed foods	2,840.4	12/2016	738.5	11.2	21.0
Dangote Sugar Refinery	Sugar	585.0	12/2016	689.0	22.1	10.0
Flour Mills Nigeria	Grains	247.8	03/2017	1,889.3	19.0	7.9
Cadbury Nigeria	Cocoa	61.3	12/2016	121.7	-5.2	-2.5
Tiger Branded Consumer Goods	Grains	135.4	09/2016	353.4	na	15.9
Honeywell Flour Mill	Grains	44.5	03/2017	191.7	-0.9	15.5
Presco	Palm oil and other oils, fats	183.3	12/2016	63.8	24.2	204.3
Okomu Oil Palm	Palm oil	178.1	12/2016	58.3	19.2	48.4
Livestock Feeds	Animal feed	7.3	12/2016	44.9	22.1	6.1
Multi-Trex Integrated Foods	Cocoa processing	5.2	04/2014	8.9	-35.9	-108.2
Northern Nigeria Flour Mills	Flour	2.9	03/2017	3.4	-38.9	0.9
FTN Cocoa Processors	Cocoa processing	3.1	12/2016	3.5	122.0	-9.0
Smart Products Nigeria	Palm kernel oil	0.1	12/2016	0.2	-0.2	44.9
Ellah Lakes	Fish farming	1.4	07/2015	0.4	145.9	-48.1

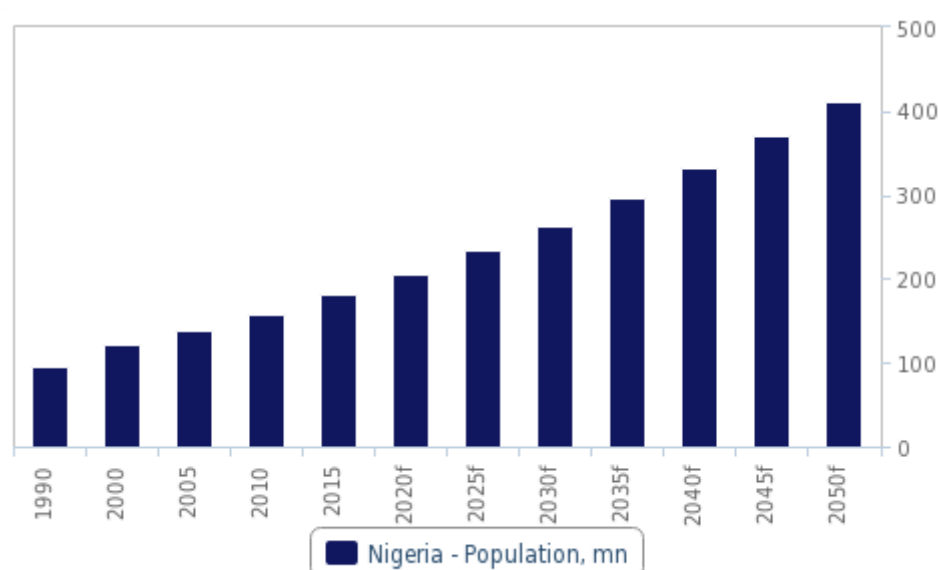
na = not available. Source: Bloomberg, Fitch Solutions

Nigeria Demographic Outlook

Demographic analysis is a key pillar of our macroeconomic and industry forecasting model. Not only is the total population of a country a key variable in consumer demand, but an understanding of the demographic profile is essential to understanding issues ranging from future population trends to productivity growth and government spending requirements.

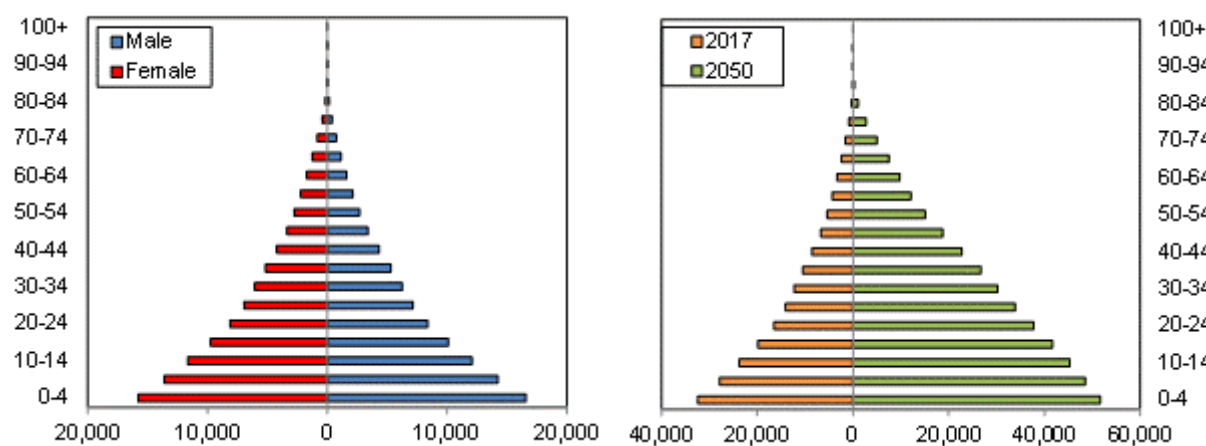
The accompanying charts detail the population pyramid for 2017, the change in the structure of the population between 2017 and 2050 and the total population between 1990 and 2050. The tables show indicators from all of these charts, in addition to key metrics such as population ratios, the urban/rural split and life expectancy.

Population
(1990-2050)



f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

Nigeria Population Pyramid
2017 (LHS) & 2017 Versus 2050 (RHS)



Source: World Bank, UN, Fitch Solutions

POPULATION HEADLINE INDICATORS (NIGERIA 1990-2025)

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, total, '000	95,270.0	122,352.0	138,939.5	158,578.3	181,181.7	206,152.7	233,691.9
Population, % y-o-y		2.53	2.62	2.70	2.68	2.58	2.51
Population, total, male, '000	47,928.9	61,684.9	70,160.0	80,204.2	91,768.7	104,524.8	118,562.9
Population, total, female, '000	47,341.1	60,667.1	68,779.5	78,374.1	89,413.0	101,627.9	115,128.9
Population ratio, male/female	1.01	1.02	1.02	1.02	1.03	1.03	1.03

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

KEY POPULATION RATIOS (NIGERIA 1990-2025)

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Active population, total, '000	49,681.5	65,560.5	74,459.2	84,414.5	96,296.0	110,907.5	128,253.5
Active population, % of total population	52.1	53.6	53.6	53.2	53.1	53.8	54.9
Dependent population, total, '000	45,588.5	56,791.6	64,480.3	74,163.8	84,885.7	95,245.2	105,438.4
Dependent ratio, % of total working age	91.8	86.6	86.6	87.9	88.2	85.9	82.2
Youth population, total, '000	42,845.6	53,347.3	60,672.2	69,822.7	79,928.3	89,595.2	98,881.2
Youth population, % of total working age	86.2	81.4	81.5	82.7	83.0	80.8	77.1
Pensionable population, '000	2,742.9	3,444.2	3,808.1	4,341.0	4,957.5	5,650.0	6,557.2
Pensionable population, % of total working age	5.5	5.3	5.1	5.1	5.1	5.1	5.1

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

URBAN/RURAL POPULATION & LIFE EXPECTANCY (NIGERIA 1990-2025)

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Urban population, '000	28,276.1	42,627.4	54,289.2	68,949.8	86,561.4	106,638.7	129,131.1
Urban population, % of total	29.7	34.8	39.1	43.5	47.8	51.7	55.3
Rural population, '000	66,993.9	79,724.6	84,650.3	89,628.4	94,620.4	99,514.0	104,560.8
Rural population, % of total	70.3	65.2	60.9	56.5	52.2	48.3	44.7
Life expectancy at birth, male, years	44.7	45.4	47.5	50.1	52.2	54.4	56.4
Life expectancy at birth, female, years	47.2	47.2	49.0	51.6	53.8	56.1	58.4
Life expectancy at birth, average, years	45.9	46.3	48.2	50.8	53.0	55.2	57.4

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

POPULATION BY AGE GROUP (NIGERIA 1990-2025)

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, 0-4 yrs, total, '000	16,808.7	21,083.5	24,325.6	27,699.3	31,109.2	33,914.2	36,830.0
Population, 5-9 yrs, total, '000	14,066.1	17,217.6	19,698.2	23,021.7	26,417.7	29,887.1	32,768.2
Population, 10-14 yrs, total, '000	11,970.9	15,046.2	16,648.3	19,101.7	22,401.4	25,793.9	29,283.0
Population, 15-19 yrs, total, '000	9,873.7	13,315.5	14,628.9	16,213.2	18,648.9	21,923.3	25,319.8
Population, 20-24 yrs, total, '000	7,995.2	11,266.8	12,810.6	14,102.2	15,671.5	18,076.4	21,341.5
Population, 25-29 yrs, total, '000	6,722.1	9,154.2	10,783.6	12,292.0	13,565.3	15,115.8	17,517.4
Population, 30-34 yrs, total, '000	5,653.0	7,356.3	8,739.2	10,319.2	11,795.2	13,052.3	14,612.2
Population, 35-39 yrs, total, '000	4,723.9	6,158.7	7,006.5	8,345.9	9,884.0	11,331.0	12,595.7
Population, 40-44 yrs, total, '000	4,126.6	5,142.6	5,839.0	6,665.1	7,964.6	9,463.4	10,898.2
Population, 45-49 yrs, total, '000	3,535.2	4,246.9	4,840.7	5,516.4	6,319.8	7,580.9	9,049.1

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Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, 50-54 yrs, total, '000	2,903.3	3,631.8	3,941.1	4,511.8	5,165.1	5,945.6	7,166.7
Population, 55-59 yrs, total, '000	2,329.1	2,993.9	3,285.5	3,587.2	4,131.1	4,759.0	5,508.1
Population, 60-64 yrs, total, '000	1,819.4	2,293.6	2,584.1	2,861.3	3,150.5	3,659.8	4,244.8
Population, 65-69 yrs, total, '000	1,318.1	1,628.7	1,826.3	2,085.7	2,336.5	2,605.0	3,053.3
Population, 70-74 yrs, total, '000	829.6	1,037.9	1,136.6	1,300.4	1,508.6	1,719.0	1,940.3
Population, 75-79 yrs, total, '000	411.1	534.9	580.4	654.6	764.6	907.6	1,052.3
Population, 80-84 yrs, total, '000	147.6	194.6	211.9	239.6	277.1	333.4	405.5
Population, 85-89 yrs, total, '000	32.3	42.7	47.0	54.0	62.7	75.3	93.6
Population, 90-94 yrs, total, '000	3.9	5.1	5.4	6.4	7.5	9.1	11.4
Population, 95-99 yrs, total, '000	0.2	0.3	0.4	0.4	0.5	0.6	0.8
Population, 100+ yrs, total, '000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

POPULATION BY AGE GROUP % (NIGERIA 1990-2025)							
Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, 0-4 yrs, % total	17.64	17.23	17.51	17.47	17.17	16.45	15.76
Population, 5-9 yrs, % total	14.76	14.07	14.18	14.52	14.58	14.50	14.02
Population, 10-14 yrs, % total	12.57	12.30	11.98	12.05	12.36	12.51	12.53
Population, 15-19 yrs, % total	10.36	10.88	10.53	10.22	10.29	10.63	10.83
Population, 20-24 yrs, % total	8.39	9.21	9.22	8.89	8.65	8.77	9.13
Population, 25-29 yrs, % total	7.06	7.48	7.76	7.75	7.49	7.33	7.50
Population, 30-34 yrs, % total	5.93	6.01	6.29	6.51	6.51	6.33	6.25
Population, 35-39 yrs, % total	4.96	5.03	5.04	5.26	5.46	5.50	5.39
Population, 40-44 yrs, % total	4.33	4.20	4.20	4.20	4.40	4.59	4.66
Population, 45-49 yrs, % total	3.71	3.47	3.48	3.48	3.49	3.68	3.87
Population, 50-54 yrs, % total	3.05	2.97	2.84	2.85	2.85	2.88	3.07
Population, 55-59 yrs, % total	2.44	2.45	2.36	2.26	2.28	2.31	2.36
Population, 60-64 yrs, % total	1.91	1.87	1.86	1.80	1.74	1.78	1.82
Population, 65-69 yrs, % total	1.38	1.33	1.31	1.32	1.29	1.26	1.31
Population, 70-74 yrs, % total	0.87	0.85	0.82	0.82	0.83	0.83	0.83
Population, 75-79 yrs, % total	0.43	0.44	0.42	0.41	0.42	0.44	0.45
Population, 80-84 yrs, % total	0.15	0.16	0.15	0.15	0.15	0.16	0.17
Population, 85-89 yrs, % total	0.03	0.03	0.03	0.03	0.03	0.04	0.04
Population, 90-94 yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Population, 95-99 yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Population, 100+ yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

Agribusiness Methodology

Industry Forecast Methodology

Fitch Solutions' industry forecasts are generated using the best-practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

Common to our analysis of every industry is the use of vector autoregressions. Vector autoregressions allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historic data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

Fitch Solutions mainly uses ordinary least squares estimators. In order to avoid relying on subjective views and encourage the use of objective views, we use a 'general-to-specific' method. Fitch Solutions mainly uses a linear model, but simple non-linear models, such as the log-linear model, are used when necessary. During periods of 'industry shock', for example, if poor weather conditions impede agricultural output, dummy variables are used to determine the level of impact.

Effective forecasting depends on appropriately selected regression models. We select the best model according to various different criteria and tests, including but not exclusive to:

- R² tests explanatory power; adjusted R² takes degree of freedom into account;
- Testing the directional movement and magnitude of coefficients;
- Hypothesis testing to ensure coefficients are significant (normally t-test and/or P-value);
- All results are assessed to alleviate issues related to auto-correlation and multicollinearity;

Human intervention plays a necessary and desirable role in all of our industry forecasting. Experience, expertise and knowledge of industry data and trends ensure analysts spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Sector-Specific Methodology

Within the Agribusiness industry, issues that might result in human intervention could include but are not exclusive to:

- Technological developments that might influence future output levels (for example greater use of biotechnology);
- Dramatic changes in local production levels due to public or private sector investment;
- The regulatory environment and specific areas of legislation, such as import and export tariffs and farm subsidies;
- Changes in lifestyles and general societal trends;
- The formation of bilateral and multilateral trading agreements, and political factors.

The following two examples show the demand (consumption) and the supply (production) of rice. Note that the explanatory variables for both are quite similar, but the underlying economic theory is different.

Example Of Rice Consumption Model

$$(\text{Rice consumption})_t = \beta_0 + \beta_1 * (\text{real private consumption per capita})_t + \beta_2 * (\text{inflation})_t + \beta_3 * (\text{real lending rate})_t + \beta_4 * (\text{population})_t + \beta_5 * (\text{government expenditure})_t + \beta_6 * (\text{food consumption})_{t-1} + \epsilon_t$$

Where:

- β are parameters for this function.
- Real private consumption per capita has a positive relationship with rice consumption, if rice is a normal good in a particular country. If rice is an inferior good in a country, the relationship is negative. So the sign of β_1 is determined by a specific product within a specific country.
- When inflation is high, people with rational expectations will consume today rather than wait for tomorrow's high price to come. Higher rice demand in year t due to higher inflation in that year leads to an assumed positive sign of β_2 .
- The relationship between real lending rate and rice consumption is expected to be negative. When real lending rates increase, disposable incomes, especially for those with mortgage burdens, etc, will decrease. So the sign of β_3 is expected to be negative.
- Of course, other things being equal, growth in rice consumption can also be caused by growth in population. Consequently, positive sign of β_4 is expected.
- Government expenditure typically causes total disposable incomes to rise. So the sign of β_5 is expected to be positive.
- Human behaviour has a trend: a high level of food consumption in previous years means there is very likely to be a high level of food consumption the next year. So the positive sign of β_6 is expected.
- ϵ is the error/residual term.

Example Of Rice Production Model

$$(\text{Rice production})_t = \beta_0 + \beta_1 * (\text{real GDP per capita})_t + \beta_2 * (\text{inflation})_t + \beta_3 * (\text{real lending rate})_t + \beta_4 * (\text{rural population})_t + \beta_5 * (\text{government expenditure})_t + \beta_6 * (\text{food production})_{t-1} + \epsilon_t$$

Where:

- The same as above: the relationship between real GDP per capita and rice production depends on whether rice is normal or inferior good in that country.
- If high inflation is caused by food prices increasing, farmers will be more profitable. Then they will supply more agricultural product (eg, rice) to increase their marginal (extra) profit, although this is tempered by the rising cost of other inputs in line with inflation.
- There is a global move towards corporate farming, away from small holdings, in order to achieve greater agricultural productivity. Corporate farming means more investment in the modes of production, ie, agricultural machinery. Higher real lending rates discourage investment, which in turn reduce production.
- **Fitch Solutions** assumes that only the rural population has a positive effect on agricultural product supply.
- With supportive government policy, other things being equal, rice production is expected to go up. Government expenditure is likely to play some role in supporting agribusiness.
- Again, previous food production positively affects this year's prediction.

Agribusiness Market Value

The construction of the Agribusiness market value is done in two steps.

- **Fitch Solutions** constructs an in-house model of the agribusiness market. Where for each commodity, its forecasted production value is multiplied by its commodity price. This is repeated for each commodity in the **Fitch Solutions** agribusiness universe and then aggregated to give a **Fitch Solutions** agribusiness total market value. Commodity prices reflect either

market prices or production prices, this depends on the commodity in question and whether sufficient data is available.

- **Fitch Solutions** uses their in-house agribusiness total market value model as a benchmark model to forecast FAO's gross production value. In addition analysts can also subjectively intervene into the model if necessary to take into account qualitative data.

To summarise the final Agribusiness market value is historical data from the FAO gross production value which is then forecasted using an in-house **Fitch Solutions** agribusiness market value model that is objectively and subjectively estimated.

The model itself is priced in US dollars. Conversion to local currency and euros is done directly using **Fitch Solutions'** country risk exchange rate forecasts.

Fitch Solutions ensures that our internal model best matches the FAO gross production value definition and construction to ensure that our internal model serves as a useful benchmark.

FAO Definition of Gross Production Value (USD)

Value of gross production has been compiled by multiplying gross production in physical terms by output prices at farm gate. Thus, value of production measures production in monetary terms at the farm-gate level. Since intermediate uses within the agricultural sector (seed and feed) have not been subtracted from production data, this value of production aggregate refers to the notion of 'gross production'.



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