



INVESTMENT BRIEF
MAIZE, SOYBEAN AND CASSAVA VALUE CHAINS

NIGERIA

There are considerable opportunities for targeted investment and coordinated action to address declining production and processing capacity in the maize, soybean and cassava value chains in Nigeria. Unmet market demand is substantial – both within the country, including increased demand for processed goods due to the changing dietary trends of an expanding middle-class, and in export markets. Moreover, a new generation of agro-support providers (ASPs) - intermediaries that support producers and the supply of quality goods to processors - has emerged in Nigeria, which holds potential to support transformative investments to improve production in these chains.

These are the main findings of an Investment Prospectus (IP) on the maize, soybean and cassava value chains in Nigeria prepared in 2019 by partners in the Smallholder and Agri-SME Finance and Investment Network (SAFIN). The prospectus focuses in particular on three alternative investment options to target these opportunities, namely:

1. Expanding and replicating successful ASP models;
2. Developing facilities to process soybeans into soya cake and crude soya oil; and
3. Developing facilities to process cassava into packaged garri.

Country and Value Chain Overview

Nigeria is Africa's most populous country and has one of the youngest populations in the world, with 44% under 15 years of age. Over the last 20 years of uninterrupted civilian rule, the country had sustained a GDP growth above 5% between 2000 and 2014, which supported a per capita income increase of 749%. However, growth has dipped from 2014 leading into a recession in 2016. While GDP growth has slowly recovered since then, reaching 2.27% in 2019¹, Nigeria remains low on the UN Human Development Index, ranking 158 out of 189 countries and territories in 2018².

In 2018, agriculture contributed 25.1% of GDP and accounted for 48% of the workforce, 73% of which was male. While this contribution has remained relatively constant since 2009, the per capita output of the sector has declined by 31.5%, from \$667.46 in 2009 to

\$456.59 in 2018, indicating a considerable decrease in productivity. Today, Nigeria faces challenges in meeting domestic demand for food and its products often fail to meet quality requirements to compete on export markets - indeed, the sector accounted for 1.6% of 2018 exports, compared to 82% for crude oil.

Soybean, maize and cassava share several common attributes in the context of Nigeria. All three are cultivated in substantial volumes in the country, have high nutritional value and play important roles in local food systems. Critically for SAFIN, their value chains involve large numbers of agri-SMEs, particularly for processing and for the production of derivative products. Finally, for all three crops there is large unmet demand, both in domestic and in potential export markets.

Nigeria is the world's largest producer of cassava, which is also the most widely cultivated crop and the second most consumed in the country. However, cassava production is characterized by poor-quality planting material and a predominance of small-scale holdings (less than 2 hectares, with an average of 0.5 hectares). Production is primarily for local food markets.

Nigeria is also one of the largest producers of maize and soybeans in Africa, second only to South Africa (respectively, fourteenth and fifteenth, globally). Both crops are grown and processed domestically for animal feed (livestock, poultry and fisheries) and edible oils. As with cassava, the use of poor planting material and small-scale traditional production techniques is associated with low yields. Seasonal production and significant post-harvest losses due to limited mechanisation compound these challenges, resulting in a shortfall in local supply to meet

the year-round requirements of processors and requiring reliance on imports. For example, Nigeria was projected to import 400,000 metric tons of corn (3.8% of local production) and 85,000 metric tons of soybeans (7.4% of local production) in 2019/20.

In recent years, the Nigerian government has renewed its focus on the agriculture sector to generate broad-based growth, diversify the economy away from crude oil, create jobs, and achieve food security. The Federal Government's current agricultural policy (*Agricultural Promotion Policy 2016-2020*) aims to tackle many of the challenges affecting the sector by improving productivity and standards on domestic food production to guarantee food security and increase exports. New and improved financial solutions for the sector are seen as a major factor in the process.

Key Challenges to Increased Agricultural Production

- **Reliance on traditional agricultural practices**

Near-subsistence farming, the use of traditional cropping tools and systems, and a reliance on traditional (low yield) varieties of seeds characterizes agricultural production in Nigeria. These features make it challenging to increase production. For instance, farmers struggle to overcome higher costs and risks associated with switching to new high-yielding varieties of seeds. For service providers, the wide geographical spread of crops resulting from traditional plot and crop diversification practices make their operations costly and complex.

- **Social and economic factors**

In Nigeria, the agriculture sector is widely perceived as high risk with low expectations of profitability. This leads young people to migrate to urban areas, leaving behind an aging population of farmers (avg. 60 years). The visible effects of climate change and ongoing domestic farmer-herder conflicts compound this perception of risk.

- **Limited use of certified seeds and agrochemicals**

Farmers today source over 90% of their seeds either from their own saved reserves or from the informal sector - generally indigenous varieties that they know and trust - and make limited use of more expensive improved seed varieties from formal sources. Misuse of agrochemicals is relatively common, caused by limited knowledge or training on proper use or by cost constraints that lead farmers to utilize substandard or counterfeit products.

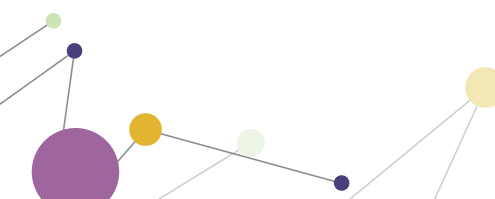
- **Poor access to mechanization**

Agricultural activities in Nigeria largely rely on manual labour. Nigeria's mechanization rate of 0.27 horsepower per hectare is well below the FAO recommended rate of 1.5 horsepower per hectare. Plot diversification contributes to discouraging the use of equipment, as it necessitates transporting each piece across locations. High cost presents an additional hurdle. The low mechanization rate in the post-harvest operations - i.e. the use of mechanized harvesters and threshers - contributes to post-harvest grain losses of about 20 - 30% of output and root and tuber losses of 30 - 50%³.

Financial Ecosystem

The public sector is one of the largest providers of investment to agriculture, which it supports through several initiatives designed to stimulate the financial ecosystem around agricultural activities (see Key Actors below). However, in 2014-2018 the government allocated only 1.44% to 2.01% of the total national annual budget to agriculture, well below the 10% target set by the African Union Maputo declaration of 2003.

Formal private sector lending to the agriculture sector stood at NGN 610.1 billion (\$2 billion) by the end of 2018. This represents 4% of bank credit to the private sector; the lowest banking sectoral allocation. In addition, 60% of banking sector credit is actually funded by the Central Bank through a number of intervention funds managed by commercial banks. The limited engagement of private lenders in the sector can be ascribed to high risk, low return expectations, low public sector funding and lack of



innovation. A handful of commercial banks (e.g. FCMB, Sterling Bank, Unity Bank) and a few micro-finance institutions (e.g. LAPO Microfinance Bank) invest in agriculture, generally with high interest rates (more than 25% per annum on average) and considerable collateral requirements.

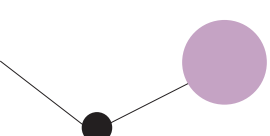
By far the largest source of financial investment into the agriculture sector originates from sector operators, notably smallholder farmers and companies operating in specific value chains, both domestic and international. According to the National Bureau of Statistics, agriculture received 1.6% (US\$195.7 million) of total capital inflows into the country in 2017. This represents a significant increase over the 2016 amount of US\$22.47, but remains well below investment in other industries (e.g. Servicing - 13.75%, Production - 12.16%, Telecoms - 4.96%, Oil & gas - 3.57% and Financing - 2.76%). Major investors in Nigerian agriculture include Olam, Presco Plc, Okomu Oil Palm

Company Plc, Nestle Nigeria Plc, Flour Mills of Nigeria Plc, Nigerian Breweries Plc, and PZ Wilmar Ltd.

Access to finance for investment is a constraint for actors across the sector, but particularly for small-scale producers and SMEs in general. In recent years, a number of non-traditional financial actors have emerged in the sector, including fintech firms such as Lidya, Renmoney and Zedvance, which small loans starting at USD 10,000 that can be disbursed in a matter of hours and can support working capital needs. Other institutions such as GroFin and FAFIN target SMEs specifically with a blend of equity investments and technical support to build sustainable businesses.

Key challenges to financing SMEs in Nigeria

- Most SMEs are unregistered one-man businesses with unsupervised accounting practices, making profitability difficult to ascertain and/or verify.
- SMEs in Nigeria are distinguished by a low survival rate (20% according to UNIDO), which is linked to inadequate sector expertise and managerial capability of business owners, as well as limited access to skilled and/or specialized employees.
- The perceived high risk of investing in SMEs in Nigeria leads most commercial lenders to require collateral worth at least double the value of the loan under consideration (e.g. asset or property), which most SMEs are unable to commit to.



Key Institutional Actors and Programmes

Relevant government entities

The Federal Ministry of Agriculture and Rural Development (FMARD)

The Ministry is responsible for overall national agricultural policies, programmes and projects, as well as the coordination of bilateral and all donor-assisted interventions.

Bank of Agriculture

The BOA is a development bank established by the Federal Government to provide credit to agricultural value chain activities. The bank created several products targeting various segments of different value chains. Loans range from NGN 250,000 (USD 650) to NGN 1 billion (USD 2.5 million) at interest rates starting at 9% with a tenor not exceeding five years.

The Central Bank of Nigeria (CBN)

In addition to its core functions as the apex monetary authority of Nigeria, CBN manages major development initiatives in agriculture, rural development, and micro, small and medium enterprises. These include:

- **Anchor Borrowers Scheme (ABS)**

The Anchor Borrowers Scheme of the CBN aims to create linkages between smallholder farmers and anchor companies involved in processing. The objective is to increase agricultural output and significantly improve processors' capacity utilization. Goals also include deepening financial inclusion in rural areas and assisting smallholder farmers to grow from subsistence to commercial production. Interest rates on loans are around 9%. Since its inception in November 2015, the ABS has financed about N200 billion (USD 500 million) of loans to smallholder farmers and agri-SMEs across 19 commodities, including NGN 40.554 billion (USD 100 million) to 170,621 soybean, maize and cassava farmers cultivating 251,915 hectares of land nationwide.

- **Agricultural Credit Support Scheme (ACSS)**

The initial ACSS fund of NGN 50 billion (USD 130 million) was established with contributions from the CBN and deposit money from banks to develop the agriculture sector by financing large projects at low interest rates. The borrowing rate is 14%, with the CBN absorbing 6%, leaving the borrower to pay 8% at full repayment.

- **Agricultural Credit Guarantee Scheme Fund (ACGSF)**

The ACGSF offers a 75% guarantee backed by the CBN on agricultural credit in default, minus collateral. Interest payments are at market rates, although the CBN repays 40% of this cost when loans are repaid. The scheme targets small-scale farmers who need small loans.

- **Agri-Business/Small and Medium Enterprises Investment Scheme (AGSMEIS)**

The AGSMEIS is an initiative of the Nigeria's Bankers Committee guided by the CBN. Its aim is to support Federal Government efforts and policies promoting agricultural businesses and SMEs as a vehicle for sustainable economic development and job creation. The AGSMEIS requires all banks in the country to set aside 5% of annual post-tax profits for the scheme.

- **Commercial Agricultural Credit Scheme (CACS)**

The CBN established CACS in 2009 in collaboration with FMARD to provide credit facilities at a single-digit interest rate to farmers. Under the CACS, NGN 200 billion (USD 500 million) was earmarked for lending at 9% to operators in production, processing, storage and input provision. Originally slated to end in 2015, the scheme has been extended to 2025.

- **Refinancing and Rediscounting Facility (RRF)**

The refinancing facility of the CBN is a special window for banks that are willing to provide long-term loans to agriculture with a tenor of 5+ years. When these banks need additional liquidity, the CBN provides an amount that represents a percentage of their already outstanding asset portfolio at a reduced rate.

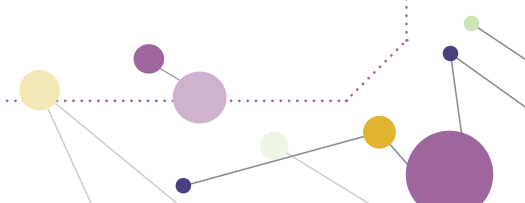
Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL)

Launched by the CBN in 2011 with USD 500 million in funding, NIRSAL was conceived as a dynamic, holistic public-private initiative to define, measure, price and share agribusiness-related credit risk. NIRSAL's objective is to enable the flow of affordable financing to all players along entire agricultural value chains. There are five pillars to the scheme, namely:

1. A **Risk-sharing Facility** (USD 300 million) to address the financial sectors' perception of high-risks in agriculture by sharing losses on loans;
2. An **Insurance Facility** (USD 30 million) to expand insurance products for agricultural lending such as weather index insurance and innovative pest and disease insurance;
3. A **Technical Assistance Facility** (USD 60 million) to support banks to lend sustainably to agriculture, enabling producers to borrow and use loans more effectively;
4. A **holistic Bank Rating Mechanism** (USD 10 million) to rate banks based on two factors: (i) the effectiveness of their agricultural lending, and (ii) the social impact achieved; and,
5. A **Bank Incentives Mechanism** (USD 100 million) providing cash rewards to highly rated banks (based on Pillar 4) to build their long-term capabilities for agricultural lending.

Bank of Industry

The BOI is a development finance institution established by the Federal Government to provide access to funds for startups, SMEs, and large enterprises. The Ministry of Finance Incorporated (MOFI) Nigeria, the CBN and private shareholders own the BOI. It has various intervention funds focused on MSMEs and the agriculture sector, including a Federal Government Special Intervention Fund for MSMEs at 9% and the NGN 13.6 billion (USD 35 million) Rice and Cassava Fund, aimed at developing rice mills and high-quality cassava flour mills nationwide.



SAFIN Partners Operating in the Selected Value Chains

AFEX Commodities Exchange

AFEX is a private sector commodities exchange firm that provides solutions in agriculture by linking producers, processors and investors across various agro-commodity value chains. These include soybeans and maize. The company offers products to unlock finance for the sector and strengthening production, particularly through access to inputs. AFEX also enables market access to farmers through aggregation and storage services that allow them to secure better prices.

Alliance for a Green Revolution in Africa (AGRA)

AGRA works with partners on federal-level engagement and applies a dual-approach in two priority states (Kaduna and Niger). The first part of this approach revolves around policy engagement at the State level, with support to policy formulation and implementation, coordination with agribusinesses and budget allocations to the sector. The second part involves facilitating public-private partnerships that address structural constraints and introduce new technologies, increasing access to credit from financial institutions through de-risking mechanisms, and strengthening farmer production capacity and market linkages.

Food and Agriculture Organization of the United Nations (FAO)

FAO activities in Nigeria focus on five priority areas⁴, which stem from the national commitment to attain sustainable national food and security nutrition and to position agriculture as a vehicle for economic growth and job creation. Amongst other initiatives, FAO is working with the FMARD and the maize farmers association to control the impact of fall army worm in maize cultivation and it has promoted the use of cassava as an ingredient for livestock manufacturing and aquaculture feed.

International Fund for Agricultural Development (IFAD)

IFAD's programme portfolio in the country includes the Value Chain Development Programme (VCDP), co-funded with the Federal Government of Nigeria (FGN). This is a six-year initiative targeting smallholder farmers and aiming to strengthen the cassava and rice value chains across six states (Anambra, Benue, Ebonyi, Niger, Ogun and Taraba). VCDP is anchored in the government's vision for agricultural transformation through a value chain approach, emphasising enhanced productivity and market access.

Partnership Initiatives in the Niger Delta (PIND)

Established in 2010 with USD 50 million in initial funding from Chevron Corporation, PIND deploys regional strategies to address deep-rooted socio-economic problems in the Niger Delta. Its approach is to grow networks of international and local partners that will collaborate in developing and implementing new solutions in the region. For instance, PIND is aiming to improve the income of smallholder cassava farmers in the Niger Delta by promoting best practices in cassava farming and supporting farmers' access to enhanced crop protection products and processing technologies.

Technoserve

Operating in most of Nigeria's 36 states, TechnoServe partners with various public and private funders in agriculture and enterprise development. In agriculture, its interventions have targeted the maize, rice, cashew, tomato, cassava, soy, and poultry value chains, with a focus on increasing smallholder productivity and incomes, access to inputs and finance, and market linkages. Under the Diageo Cassava Supply Chain Development Project, smallholder farmers receive Good Agricultural Practices (GAP) training, linkage to quality input suppliers, and access to markets.

United States Agency for International Development (USAID)

USAID operates a number of relevant initiatives in Nigeria. In particular, the organization's "Feed the Future Nigeria Agribusiness Investment Activity, Cultivating New Frontiers in Agriculture (CNFA)" aims to integrate thousands of MSMEs and producer organizations as high-performing commercial actors across various value chains, including maize and soybeans. Through the Maize Quality Improvement Partnership, CNFA is also working to enhance the quality and safety of maize and soybeans available to Nestlé's food processing factories, while supporting USAID's goals of revitalizing Nigeria's agriculture sector and improving nutrition along cereal value chains. Additionally, the Feed the Future Integrated Agriculture Activity is working in parallel to enhance economic development of post-conflict areas in the Nigerian North East by developing the value chains of seven commodities, including maize and soybeans.



Opportunities for Investment and Financial Solutions

The SAFIN IP proposes three alternative investment options. Though these were identified before the COVID 19 crisis, the fundamental drivers of such opportunities and the need for more and better coordinated investments and new financial solutions persist at the time of writing (May 2020). In particular, while a re-evaluation of the investment options identified in the prospectus is advised over time, as the impact of the crisis continues to unfold, the underlying need for more collaborative approaches to financing investment opportunities in high potential value chains has been magnified during the current period.

Of the three investment options proposed in the prospectus, one focuses on supporting the development and expansion of effective ASP models (Option 1), while the others target the creation of new processing facilities to produce soybean and cassava derivatives (Option 2 and 3). The three options are not mutually exclusive.

Option 1. Investment opportunities in effective ASP models

As noted above, ASPs are generally agri-SMEs that operate as intermediaries between producers and buyers. On the production side, they effectively aggregate farmers and provide a range of services, which can include access to quality inputs, financing, training, storage and marketing services. As such, ASPs can play a critical role in helping to organize, professionalize and increase both volume and quality of agricultural production. On the demand side, they supply buyers (e.g. processors) with quality products at prices that benefit farmers. Despite these general features, ASPs can actually vary widely in terms of structure and business models, from private sector enterprises (e.g. Babban Gona) to farmers' organizations and cooperatives.

As producers face new sources of uncertainty due to the coronavirus pandemic, the aggregation and services provision role of ASPs is likely to be as critical as ever today. Additionally, thanks to their increased reliance on innovative technological tools, many ASPs have been able to continue delivering their services (e.g. training and financing, as well as linkages to e-commerce platforms) during the crisis. Nevertheless, the present climate de-

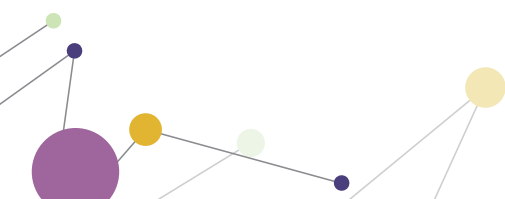
mands a re-evaluation of the potential for the sustainable expansion of different ASP models against market conditions (e.g. processing capacity, domestic and export sales capacity).

The IP proposes to support ASPs by enhancing their access to finance to scale effective business models, through a blended finance approach that reduces investment risk for financiers by combining return-seeking capital and grant capital, plus capacity building provisions to strengthen business model effectiveness both pre and post-investment. Return projections, as presented in Table 1 below, are estimated for investment by a blended fund structure into a single ASP operating primarily in the production of maize. Key assumptions underlying these projections included a three to five-year period of direct engagement with 500,000 farmers, each cultivating one hectare, resulting in a suggested average investment of NGN 500 million (USD 1.3 million) per organization (covering field operations and IT development and support).

Table 1

Expected Return on Investment in a single ASP operating in the maize value chain

Net Present Value (NGN)	NGN 770,000,000 (USD 2 million)
Internal Rate of Return (%)	213%
Payback period (years)	1.42



Option 2. Processing of soybeans to soya cake and crude soya oil

Soybeans serve as raw material for various industrial and consumer products, including poultry feed, fish feed, breakfast cereal and edible oils. Should the Nigerian middle class resume growth after the current pandemic, consumption of poultry and aquaculture that requires soya cake (for animal feed) and crude soya oil (for edible oil) will resume growth as well. These trends present a distinct opportunity to invest in the set-up of new processing facilities for soya cake and crude soya oil. Using FAO

ingredients for feed production estimates, the soya cake industry alone is worth NGN 28.1bn (USD 72 million).

Estimates provided in Table 2 are based on the development of a one ton per hour processing facility for soya cake and soya oil production, at a cost of NGN 10 per kilogram of soybeans. Figure 1 provides capital expenditure assumptions.

Table 2

Expected Return on Investment on soybean processing facility

Net Present Value (NGN)	NGN 80,000,000 (USD 200,000)
Internal Rate of Return (%)	44%
Payback period (years)	2.72

Figure 1

Capital expenditure costing for soya cake and soya oil processing facility

Equipment	Naira
Destoner	3,600,000
Hammer Mill Surge Bin	7,200,000
Extruder & Bin	18,000,000
Oil Press	18,000,000
Storage Tanks (litres)	3,600,000
Land (sqm)	1,000,000
Building Construction (per sqm)	40,000,000
Water Borehole & Treatment	1,000,000
Power Generator (Kva)	30,000,000
	122,400,000



Option 3. Investing opportunities in packaged garri processing

Garri, a derivative of cassava, is widely consumed in Nigeria, particularly among low-income groups. In 2019, 7.7 million metric tons were consumed, equivalent to approximately 30.7 million metric tons of cassava⁵. Yet, 12 million metric tons was the estimated domestic demand for garri, representing a delta of 4.3 million metric tons. This translates into a local market gap worth an estimated NGN 430bn (USD 1.1bn), to which should be added the missed opportunity to serve diaspora West African consumers in export markets in North America and Europe. As discussed above, low productivity is a major

constraint, as is poor packaging. To address these gaps, the prospectus proposes investment in small to medium scale packaged garri processing facilities, through long-term, low interest rate debt and/or venture capital.

Estimates provided in the IP are based on the development of a 25 ton per day processing facility for packaged garri production, where the cost of cassava root is set at NGN 40/kg (USD 0.10/kg), and a 5kg bag of packaged garri is sold at NGN 1,100 (USD 2.8) – see Table 3 below. Figure 2 outlines capital expenditure assumptions.

Table 3

Return on Investment on soybean processing facility

Net Present Value (NGN)	NGN 91,000,000 (USD 233,000)
Internal Rate of Return (%)	127%
Payback period (years)	0.91

Figure 2

Capital expenditure costing for packaged garri processing facility

Equipment	Naira
Peeling Machine	6,000,000
Grating Machine	600,000
Automatic Pressers	600,000
Sifter	400,000
Automatic Fryer	3,500,000
Land (sqm)	700,000
Building Construction (per sqm)	6,000,000
Water Borehole & Treatment	1,000,000
Power Generator (Kva)	3,000,000
	21,800,000

Next Steps

After consulting with SAFIN partners and local stakeholders on the three investment options proposed in the IP, a study is being initiated in June 2020 around possible investment structures to support effective ASP models (IP Option 1). The scope for the study includes:

- **The landscape** of ASP models and actors currently operating in Nigeria

- **Projections** of the type and amount of financing and technical assistance required by investable ASP models to expand in line with market needs
- **Recommendations** regarding an efficient modality of coordinated action to provide such financing and technical assistance, to be rolled out in the last quarter of 2020.

Notes

- 1 Source: Tradingeconomics.com – National Bureau of Statistics, Nigeria (<https://tradingeconomics.com/nigeria/gdp-growth-annual>)
- 2 Source: *Human Development Report 2019* – UNDP (http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NGA.pdf)
- 3 Post-Harvest Losses: *A Dilemma in Ensuring Food Security in Nigeria* – Bolarin et al, 2015
- 4 The FAO five priority areas in Nigeria are: A. Support for National Food and Nutrition Security; B. Support for Agricultural Policy and Regulatory Frameworks; C. Support the Agricultural Transformation Agenda (ATA) for Priority Value Chains, with Promotion of Decent Employment for Youth and Women; D. Support for Sustainable Management of Natural Resources; E. Support for Disaster Risk Reduction and Emergency Management.
- 5 Action Plan for a Cassava Transformation in Nigeria

30 May 2020

Please visit our website www.safinetwork.org to access the complete version of all Investment Prospectuses published by SAFIN.

About

The Smallholder and Agri-SME Finance and Investment Network (SAFIN) is a partnership of actors that are committed to aligning their efforts to scale up access to financial services for agri-SMEs and for commercial small farms.

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Pilot Anchor

