COCOA VALUE CHAIN ASSESSMENT REPORT

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Acknowledgements

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Abbreviations

ACGSF:	Agricultural Credit Guarantee Scheme Fund
ACI:	Africa Cocoa Initiative
ADPs:	Agricultural Development Projects
ATA:	Agricultural Transformation Agenda
ATED:	Appropriate Technology Enabled Development
BSC:	Business Service Centers
CABISCO:	Association of Chocolate, Biscuit and Confectionery Industries
CAC:	Corporate Affairs Commission
CAN:	Cocoa Association of Nigeria
CBN:	Central Bank of Nigeria
CCON:	Cocoa Corporation of Nigeria
CBNRMP:	Community Based Natural Resource Management Program in the Niger Delta
CFAN:	Cocoa Farmer's Association of Nigeria
CRIN:	Cocoa Research Institute
CVC:	Cocoa Value Chain
DAWN:	Development Agenda for Western Nigeria
DFID:	Department for International Development
EEG:	Export Expansion Grants
EFTA:	European Free Trade Agreement
EU:	European Union
FAO:	Food and Agriculture Organization of the United Nations
FOB:	Free on Board
FBS:	Farmer Business School
FGDs:	Focus Group Discussions
FLG:	Farmer Learning Groups
FMARD:	Federal Ministry of Agriculture and Rural Development
FTF:	Feed the Future
GAP:	Good Agricultural Practices
GBP:	British Pound
GDP:	Gross Domestic Product
GESS:	Growth Enhancement Support Scheme
ICCO:	International Cocoa Organization
ICE:	Intercontinental Exchange
ICPM:	Integrated Crop Pest Management
IFAD:	International Fund for Agricultural Development
IITA:	Ibadan and International Institute of Tropical Agriculture
IMF:	International Monetary Fund
KII:	Key Informant Interviews
LBAs:	Licensed Buying Agents
LGA:	Local Government Area
MDAs:	Ministries, Departments and Agencies
M&E:	Monitoring and Evaluation
MT:	Metric tonnes
NAEC:	Nigerian Agricultural Enterprise Curriculum
NCDC:	National Cocoa Development Committee
NEPC:	Nigerian Export Promotion Council
NGOs:	Non-Governmental Organizations
PIND:	Foundation for Partnership Initiatives in the Niger Delta
PRD:	Planting, Replanting and Diversification
R&D:	Research & Development
SAPs:	Structural Adjustment Policies
STCP:	Sustainable Tree Crops Project
TCU:	Tree Crop Unit
MARKETS II:	Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites II
US$/USD:	US Dollars
VC:	Value Chain
WCF:	World Cocoa Foundation

Glossary

Cocoa tree: *Cacao*, (Theobroma *cacao*), also called *cocoa*, tropical evergreen *tree* (family Malvaceae, formerly Sterculiaceae) grown for its edible seeds, whose scientific name means "food of the gods" in Greek. Native to lowland rainforests of the Amazon and Orinoco river basins, *cacao* is grown commercially in the New World tropics.

Cocoa pod: A *cocoa pod* (fruit) has a rough, leathery rind about 2 to 3 cm (0.79 to 1.18 in) thick (this varies with the origin and variety of pod) filled with sweet, mucilaginous pulp (called baba de cacao in South America) with a lemonade-like taste enclosing 30 to 50 large seeds that are fairly soft and a pale lavender to dark brownish.

Cocoa beans: The *cocoa bean*, also called *cacao bean*, cocoa and cacao is the dried and fully fermented seed of Theobroma cacao, from which cocoa solids and, because of the seed's fat, cocoa butter can be extracted.

Cocoa liquor: *Chocolate liquor* (*cocoa liquor*) is pure *cocoa mass* in solid or semi-solid form. Like the cocoa beans (nibs) from which it is produced, it contains both cocoa solids and cocoa butter in roughly equal proportion. It is produced from cocoa beans that have been fermented, dried, roasted, and separated from their skins.

Cocoa butter: This is a creamy-colored edible vegetable fat with a cocoa flavor and aroma that is extracted from cocoa beans. Cocoa butter makes up more than 50 percent of the weight of cocoa beans and is used to make chocolate, as well as several ointments, toiletries and pharmaceutical products.

Cocoa solids: Light brown or reddish-brown substance that remains after cocoa butter is extracted from cacao beans. They are often sold as a final product in the form of cocoa powder (or cacao) which is a major ingredient in beverages and drinks across Africa. Cocoa solids are also used to make chocolate, chocolate syrup and other chocolate-based confections.

Cocoa powder: The powdery remains of chocolate liquor after cocoa butter is removed; used in baking and in low fat and low calorie recipes and as a flavoring for ice cream. Cocoa powder is an unsweetened powder produced by grinding cacao beans and pressing out the cocoa butter, better known as fat. The resulting cocoa powder is low in fat but has an intense chocolate taste. It is most commonly used in baked goods, where it is mixed with sugar and fats, such as butter, margarine, or coconut oil.

Chocolate: A food made from roasted ground cacao beans.

Facilitator/Facilitation: An action or individual (or group of individuals) that temporarily works to develop more inclusive, dynamic, and differentiated markets without becoming a part of the markets.

Food security: Food security exists when all people, at all times, have physical and economic access to sufficiently safe and nutritious food that meets their dietary needs and food preferences for an active and healthy lifestyle.

Market: A set of arrangements by which buyers and sellers are in contact to exchange goods or services; the interaction of demand and supply.

Market system: The multi-player, multi-function arrangement comprising three main sets of functions (core, rules and supporting) undertaken by different players (private sector, government, representative organizations, civil society, etc.) through which exchange takes place, develops, adapts and grows. A construct through which both conventionally defined markets and basic services can be viewed.

Upgrading: In order to respond effectively to market opportunities, upgrading is the process by which business owners innovate to add value to products or services and to make production and marketing processes more efficient.

Value addition: The enhancement added to a product or service by a company before the product is offered to customers.

Value chain governance: the relationships among the buyers, sellers, service providers and regulatory institutions that operate within or influence the range of activities required to bring a product or service from inception to its end use.

Executive Summary

The Foundation for Partnership Initiatives in the Niger Delta (PIND) is a Nigerian non-profit organization established in 2010 with initial funding by Chevron Corporation to build partnerships for peace and equitable economic development in the Niger Delta. The Foundation supports programs in partnership with public and private sector donors, seeking to create dynamic partnerships that empower communities to achieve an environment for equitable economic growth.

PIND is already implementing interventions in aquaculture, cassava, poultry, and palm oil sectors. With some of the interventions attaining full maturity and reaching scale, PIND is now expanding into the cocoa sector. The cocoa sector has growth potential and ability to increase income and employment.

The purpose of this study is to provide a detailed scoping and value chain analysis of the cocoa sector in the Niger Delta. It involved a combination of secondary review of literature and filed assessment. The field investigations lasted for four weeks between January 22 and March 9, 2018. The assessment team comprised of James Elekwachi, Market Systems Development Manager at PIND; Dr Samuel O. Dare, Agricultural Economist; Bolawa Oladokun, Cocoa Value Chain Expert; Kayode Faleti, Independent Consultant; Blessing Adebayo, Market Development Advisor at PIND; and Dr Dara Akala, PIND's Executive Director. Bill Grant, PIND's Technical Advisor provided suggestions and support on the strategy, partners' selection and proofreading of the report.

The assessment followed several steps as secondary literature review, assessment tools development, finalizing sampling plan, conducting 130 one-on-one in-depth interviews from producers' population with 95% confidence interval and 10% error of margin; and Focus Group Discussions (FGDs) and Key-Informant Interviews (KIIs) with 36 other levels of actors in eight states of Nigeria as well as validating data and information through workshop and compiling the findings for this report.

In 2016, agriculture accounted for 24.4% of Gross Domestic Product (GDP). The sector is highly concentrated on crop production, which accounts for 90% of outputs. Fishery, forestry, and livestock, account for the remaining 10%. In spite of this, the country's agricultural potential is high, because Nigeria has 82 million hectares of arable land, and so far only 34 million hectares have been cultivated (PwC, 2017). Cocoa accounted for more than 30% of Nigeria's agricultural export and generated a total of $774.6M in 2016, out of which $83.6M came from the exportation of cocoa derivatives including cocoa butter and cocoa paste.

The output of Nigerian cocoa beans for the three years between 2014/15 and 2016/17 was 620,000 metric tons (MT) and Niger Delta states contribution to this was 546,822 MT (Source: Data from the Produce Department, Ministries of Agriculture in the Niger Delta states). This implies that 88% of the recognized total cocoa production came from Niger Delta. Hence, the future of Nigerian cocoa production lies in Niger Delta. There are 120 thousand active cocoa farmers in the Niger Delta and 66% of them have plantations with size ranging from 1 to 5 hectare (ha).

Nigeria cocoa production in the past 17 years has witnessed some volatility. The main conclusion is that production is fairly flat, with peaks and valleys due to the cyclicality of cocoa tree production and weather conditions. It was discovered from the study that for one hectare of cocoa farm development in Ondo State, the 7th year is the break-even point. Aggregation of cocoa beans is done by Licensed Buying Agents (LBAs) who have a network of farm gate agents (factors), who purchase from farmers. Cooperative Multipurpose Unions (CMU) are involved in the aggregation process. In Ondo state, LBAs account for 90% of purchases, while the remaining is sold via the cooperatives to merchants and processors.

The core of the cocoa industry is divided between the processing industry (intermediate processors and finished good processors), and the exporters:

- Local intermediate processing companies produce cocoa liquor, cocoa butter, and cocoa

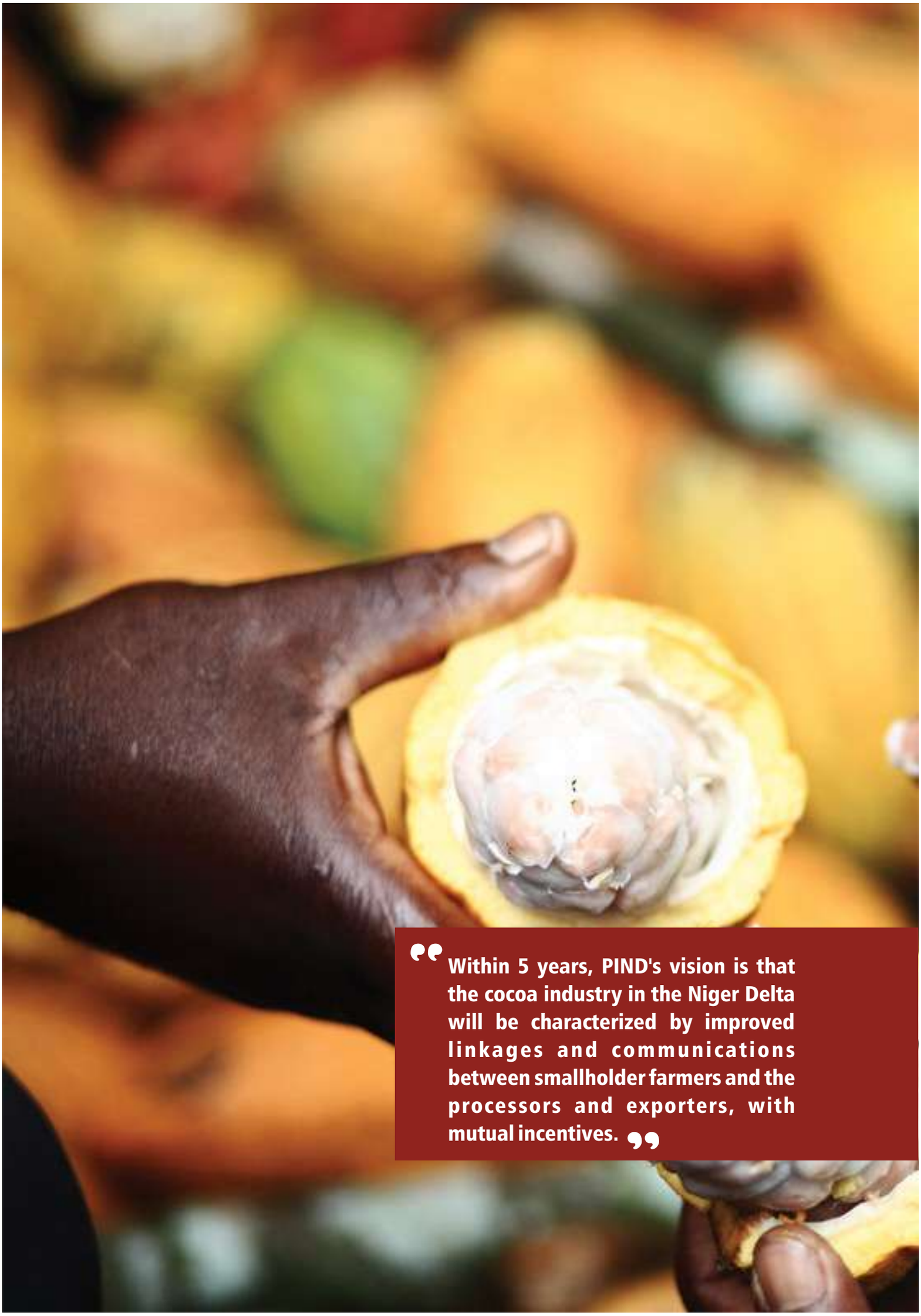
cake. A number of them are grappling for survival and indeed some have closed down operation. Of the 17 intermediate processing companies only five are functional with combined capacity utilization of 50,000 MT; and four of those are in Ondo State. An estimated 90% of these cocoa derivatives are exported, not including cocoa powder. (Source: primary data from field study)

- In Nigeria the three main final processors are Nestle, Cadbury and Promasidor. Nestle Nigeria was established in 1923 with headquarters in Lagos. Some of its key products include baby food, bottled water, cereal and health care nutrition products. Its notable brands are: Maggi, Milo and Cerelac. Cabdury established in Nigeria in 1965 with its flagship product, Bournvita. The refreshment beverages' brand include Bournvita, Cabdury chocolate and Tom Tom. Promasidor was founded in 1979 by Robert Rose. It sells filled milk powder in small sachets. It began with selling the Cowbel brand in Congo and today it sells in 30 African countries. Its brand cut across dairy, beverages, and cereals. These companies process finished product for sale into the Nigerian market.
- Findings from field investigation showed that there were123 firms in cocoa business in Nigeria including processors and exporters. There are 20 regular exporters operating in cocoa sector, but only three of them control 50% of Cocoa beans export.

Findings from the study indicated that small scale farmers have no direct contact with the processors and exporters. The awareness of sustainable production or certifications to motivate better producer price among farmers is limited to about 10% of farmers in Niger Delta region. If Nigerian exporters can incentivize its farmers to produce more cocoa, they can sell it, so the challenge is on increasing production through increased productivity and greater area under production. An integrated markets approach, considering economic, social and environmental dimensions, is needed to improve cocoa sector competitiveness.

Within 5 years, PIND's vision is that the cocoa industry in the Niger Delta will be characterized by improved linkages and communications between smallholder farmers and the processors and exporters, with mutual incentives. The industry will have a strong supporting services providers delivering the inputs, extension, and technologies that smallholder farmers need to upgrade leading to increasing productivity and higher quality cocoa to meet market demand. This vision will be achieved by working in three strategic areas:

- Enhancing better coordination of the value chain by improving relationships between producers, aggregators (licensed buying agents and factors) and exporters.
- Ensuring the quality of cocoa beans through improvements in primary processing and post-harvest activities (pod breaking, fermentation, drying) by introducing enhanced technologies and advocacy on the benefits of good quality beans.
- Increasing productivity and yield in cocoa plantations by working with input companies and agro dealers to demonstrate good agronomic practices.



"Within 5 years, PIND's vision is that the cocoa industry in the Niger Delta will be characterized by improved linkages and communications between smallholder farmers and the processors and exporters, with mutual incentives."

Chapter 1:

Introduction

1.1 Background

PIND's partnership approach is rooted in the belief that no single organization can solve the complex development in the Niger Delta. Since inception in 2010, PIND has partnered with a wide range of actors-from governments, to private sector, civil society, business memberships, charities, small business, individuals and networks - to catalyze change themselves, using facilitation in the form of technical assistance, knowledge sharing and linkage to resources.

Over the last six years, PIND's ability to develop critical cross-sector relationships, partnerships and alliances, and approach to identifying and empowering local change agents has generated impact and fostered progress towards systemic change.

PIND is already implementing interventions in the aquaculture, cassava, poultry, and palm oil sectors. Following the completion of the USAID MARKETS II project, PIND has taken over most of the MARKETS II intervention areas in the Niger Delta, including cocoa. The cocoa sector has strong growth potential, and brings with it the opportunity to increase income and employment for a broad base of the population in the Niger Delta.

The cocoa industry represents an effective avenue for poverty alleviation and ensuring economic stability in Nigeria. The sector has strong prospects of providing increased incomes for many smallholder farmers, and employment for unskilled and semi-skilled people. As demonstrated in other economies with proper focus on production of commodities of large scale commercial values, improvement in the production of cocoa can effectively mitigate the poverty level in Nigeria and especially in the Niger Delta region since seven of the fourteen producing States, including the two largest, are in the Niger Delta Region. The cocoa value chain (CVC) study was designed to include consideration of any Appropriate Technology Enabled Development (ATED) potential.

The Nigerian cocoa industry is more than 140 years old and currently runs under a fully liberalized cocoa economy since dissolution of the Cocoa Board in 1986. Prior to the discovery of crude oil in commercial quantities in the 1970s, Nigeria was the world's second largest producer of cocoa. Average cocoa production declined from 420,000 tons in the 1960s to 170,000 tons in 1999. After dropping to fourth place globally in 2011 with 292,000MT total production (Global Trade Atlas), Nigeria has now fallen to being the seventh largest producer as result of 2015 fallback to 195,000MT (International Cocoa Organization, ICCO, Quarterly Bulletin of Cocoa Statistics, Volume XLIII, No.3, 2016/2017). But this is in the process of changing, following the devaluation of the Naira and increasing demand by exporters with the now more competitive Nigerian cocoa.

The cocoa value chain needs a pragmatic strategy for upgrading production, especially in the Niger Delta region, which is largest cocoa producing region in Nigeria. It is important to address the limitations imposed by the absence of institutional control, weak support structures coupled with international trade issues. In particular, the European Union Common Agricultural Policy designed to protect EU processorshas important effects on the competitiveness of the cocoa value chain. In the light of growing opportunities in the global cocoa and chocolate markets, with demand in China alone growing to about US$4.3bn and the global market projected to grow to more than US$170 billion in 2019, it becomes imperative for the largest cocoa growing region of Nigeria to be well positioned to take advantage of the opportunities the market affords.(DAWN, 2017)

Food systems are constantly challenged by changing economic and natural environments. Multiple factors related to economic instabilities, internal conflict and insecurityand climate change can affect the functioning of food systems. Nigeria's cocoa value chain, as part of a global value chain, is susceptible to shocks such as international price fluctuations, natural hazards, climate shocks, and changes in governmental policies, Nigerian exchange rates, etc. which can impact the provision of sufficient and safe supply of cocoa.

This study aims to diagnose the cocoa sector in Nigeria, with a particular focus on the Niger Delta; to understand the structure of the Niger Delta Region's cocoa industry, identify key product channels and conduct a cocoa stakeholders mapping. It presents an overview and analysis of the cocoa industry in Nigeria. It will identify investment opportunities in the industry and other details that can aid the objective of investment mobilization and encourage sustainable pro-poor practices in the industry. The study presents the importance and needful purpose of directing attention on the opportunities for the cocoa sector of the Niger Delta region, and the challenges to reach those opportunities. It elucidates the competitiveness of the Niger Delta region's cocoa economy while identifying gaps and areas in need of intervention for sustainability and effective linkage with the global cocoa value chain.

1.2: Research Methodology and Approach to Study

In approaching this study, a combination of descriptive, qualitative and quantitative analyses was used. The team of evaluators employed the following methodology for data collection:

1.2.1 Desk research of available literature:

Available secondary literature was studied and summarized and this not only gave an insight but also provided a guide to the best approach to employ in the data collection and information gathering. Information collected from third party stakeholders (e.g., government agencies, service providers, value chain facilitators with experience in cocoa value chain development projects and scientists from the Cocoa Research Institute of Nigeria (CRIN) were useful in developing strategies and approach to the study. Reports and lessons learnt from other international donor funded programs like USAID MARKETS, Africa Cocoa Initiative (ACI) Inputs Credit Program of the World Cocoa Foundation (WCF), and the Farmer Business School (FBS) under the GIZ SSAB program with the FMARD were also useful in the development of the strategies for data collection.

1.2.2 Structured questionnaires and guide questions employed:

For field investigations, structured questionnaires and guide questions were developed and used for Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) respectively at the producer level while specific guide questions were employed in the KIIs conducted on select authorized personnel of other actors in the value chain; aggregators, traders, inputs suppliers, end-market chain buyers, and financial services providers. In addition, the team held KIIs with the policy formulators and influencers such as; Government Ministries, Departments and Agencies (MDAs), and (Non-Governmental Organizations (NGOs).

In the conduct of interviews, the team started with the end-market players and financial services providers in Lagos. This was followed by select producer-groups, inputs suppliers, intermediate processors and final processors in the Niger Delta states of Ondo, Cross River, Abia, Akwa Ibom and Edo. As the largest cocoa producing State in Nigeria and in the Niger Delta Ondo State was first visited following which the team collated and presented initial findings to the Economic Development team of PIND Foundation for necessary reviews, comments and suggestions. Thereafter, the team split into two groups to cover some other strategically selected States as one group covered Cross River while the other group covered both Abia and Akwa Ibom state together. Thereafter, team members converged in Edo State to finalize field investigation, review reports and results of data analyses to clean-up reports and finalize the draft.

1.2.3 Validation workshop:

Following the analyses of the findings and completion of an initial draft report, the study team conducted a validation workshop on May 17, 2018 in Akure with 33 participants in attendance. The essence was to validate findings from the scoping study, identify missing information, and foster linkages among the actors. The participants included representatives from intermediate processors, Licensed Buying Agents (LBAs), Cooperative Multipurpose Union (CMU), Cocoa Farmer's Association of Nigeria (CFAN) and

Smallholder producers/primary processors, Input Companies and researchers from CRIN.

1.2.4 Final report preparation:

Based on the findings from field assessment, team discussion with management and results from the validation workshop, this final report was prepared.Cross-section of participants during the Validation Workshop at Akure

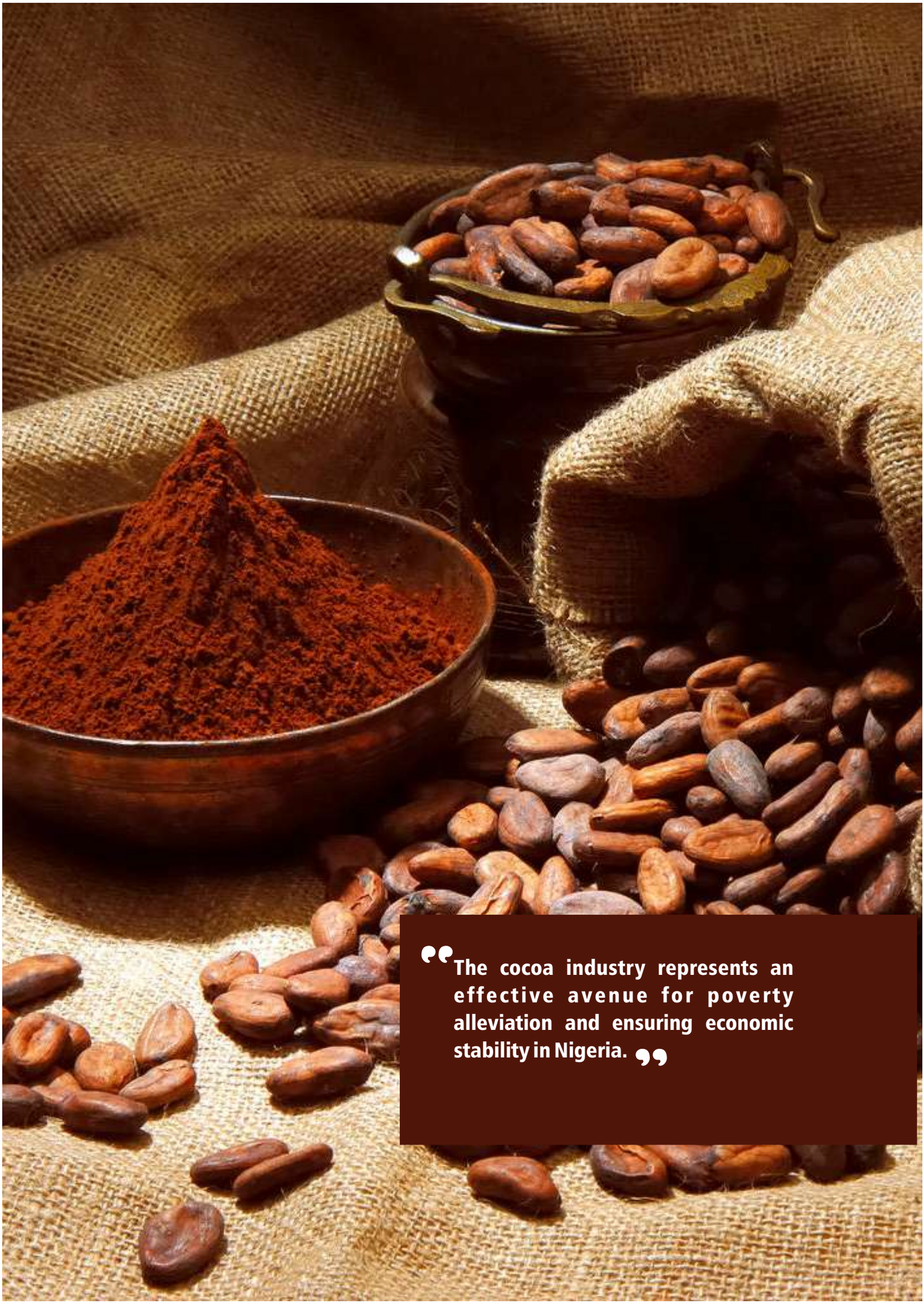
1.3: Limitations to Study

In carrying out the cocoa value chain study some constraints and limitations were experienced.

The study encountered some difficulties relating to meeting and interviewing key informants and unwillingness to release data by some actors.

To do justice to the terms of reference and to cover most of the areas outlined in it, the team had to use the allotted number of days to accomplish tasks among the major actors in the value chain. The team worked longer hours and combined analysis of findings with the field investigations in order to present initial findings to the PIND team. The assessment adopted a mixed method that combined quantitative and qualitative approaches. It emphasizes more on understanding the market system than focusing on numbers like ratio of sample size and population.

Warehouse of a major cocoa beans exporter, Starlink Global Nigeria Limited


“The cocoa industry represents an effective avenue for poverty alleviation and ensuring economic stability in Nigeria.”

Chapter 2:

SECTOR OVERVIEW: GLOBAL, NATIONAL AND NIGER DELTA

2.1: Global Outlook

2.1.1 Introduction to global cocoa market:

Cocoa is an important crop around the world. It is a cash crop for growing countries and a key import for processing and consuming countries. Cocoa travels along a global value chain crossing countries and continents. The complex global value chain involves numerous parties including farmers, buyers, shipping organizations, processors, chocolatiers, and distributors. Cultivation of cocoa at the farm level is a delicate process as crops are susceptible to various conditions including weather patterns, diseases, and insects/pests. Unlike larger, industrialized and integrated agribusiness value chains, the vast majority of cocoa still comes from small, family-run farms, who often use outdated farming practices and limited organizational leverage. A steady demand from worldwide consumers draws numerous global efforts and funds committed to support and improve cocoa farm sustainability.

Cocoa trades on two world exchanges: London (LIFFE – in Pounds) and New York (ICE - USD). In 2011, trading volume of cocoa futures on the Intercontinental Exchange (ICE) was4.95 million metric tons. Conversely, ICE traded 3.8 million tons in 2010, 390,000 tons less than total production. In November 2011, global sales of chocolate confectionery crossed $100 billion for the first time, with consumer demand for chocolate anticipated to continue increasing and likely outpacing supply (Bloomberg, 2012).

The global cocoa supply chain is becoming increasingly concentrated due to horizontal integration at the processing level, leading to mergers of transnational cocoa and chocolate companies with huge financial resources. Four transnational corporations now control more than 60 per cent of world cocoa grinding. This is in contrast to the more than five million smallholder farmers producing the cocoa that are largely disaggregated and operate at sub-optimal economy of scale. There is a general market asymmetry in favor of buyers and traders (see boxes 1 & 2 facts on global market outlook).

Box 1: Characteristics of World Cocoa Market

Market Movers (Consuming countries)	Price Takers (Producing countries)
▪ Highly concentrated and efficient through economy of scale ▪ Vertical and Horizontal integration by transnational companies with huge financial resources ▪ Large trading and processing companies control a significant share of global and local cocoa markets ▪ In terms of cocoa processing, four transnational corporations control more than 60 percent of world cocoa grindings	▪ Unorganized ▪ Lacking basic infrastructure ▪ Sub-optimal economy of scale ▪ Non-existence of weak farmer organization ▪ Broken support structure ▪ Lacking finance

2.1.2: Supply Side:

Some 4.7 million MT of cocoa with an approximate value of 12 billion USD were produced worldwide in the 2016/2017 cocoa year. Cocoa production in West Africa accounted for 73% of global output, 17% from South and Central America, and 10% from Asia. The eight largest producing countries are Côte d'Ivoire (42% of world production), Ghana (18%), Indonesia (8%), Ecuador (6%), Cameroon (5%), Brazil (4%), Nigeria (4%) and Peru (2%) (DAWN, 2017). Small farms provide more than 90% of world cocoa production, with a typical farm in Africa and Asia covering 2 to 5 hectares. With 5-6 million cocoa farmers worldwide, a total of 40-50 million people depend on cocoa for their livelihood around the world (WCF, 2012).

In a Reuter's interview, Lionel Soulard, Director of Cargill's Cocoa –focused Africa business, said the

Box 2: Global Cocoa Market

- The seven largest producing countries include: Cote d'Ivoire 42%, Ghana 18%, Indonesia 8%, Ecuador 6%, Cameroon 5%, Brazil 4%, and Nigeria 4%
- West Africa accounts for 73% of global output. South and Central America accounts for 17% while Asia accounted for 10%
- Annual global consumption of cocoa beans is approximately 3 million tons
- Two processors, Barry Callebaut and Cargill now control 70–80% of the world's couverture;
- Eight traders and grinders control 75% of worldwide cocoa trade and six chocolate companies control 40% of global chocolate trade;
- Global import of cocoa butter is led by Germany ($464,280,000); US($453,387,000); Netherlands ($414,183,000)
- Global import of cocoa powder and cake is led by US ($781,154,000); Spain ($271,419,000); France ($265,065,000)

industry expected a small global surplus in 2017/18 of about 100,000 to 150,000 tons. The global surplus was 370,000 tons in 2016/17, according to the International Cocoa Organization (Reuters, 2018). West Africa is meeting an ever larger share of the world's booming demand for chocolate, as other cocoa growing regions in the Americas and Southeast Asia see crops stagnate and farmers move into other areas, according to Cargill's Africa director.

2.1.3: Demand Side: Grindings:

While processors of cocoa beans are located throughout the world, the highest percentage of intermediate processors (who grind beans into powder) is based in Europe, followed by Asia & Oceania, the Americas, and then Africa. ICCO shows a relatively constant market share for the Americas (~22%) and Africa (~17%) while Europe (~39%) has slightly declined and Asia & Oceania (~22%) have increased.

It is worthwhile to note the ranking of cocoa importing countries depends on the composition of the goods imported: trade is not only tracked by cocoa beans but also by semi-finished products of cocoa. Today, more than 3 million tons of cocoa are consumed annually by people around the world in thousands different forms of chocolate. The cocoa, chocolate, and confectionery industry employs hundreds of thousands of people around the world and is a key user of other agricultural commodities such as sugar, dairy products, nuts, and fruits.

The Netherlands is the largest processing country by volume, handling about 13% of global grindings. Though unsuitable for growing cocoa, Europe as a whole comprises nearly 40% of the processing market. The remaining 60% is divided almost evenly between Africa, Asia, and the Americas.

Over 2000 companies in the 27 European Union (EU) and the two European Free Trade Agreement (EFTA) countries of Switzerland and Norway are represented by the Association of chocolate, biscuit and confectionery industries (CABISCO). The EU confectionery industry directly employs over 245,000 people and produces 10.4 million tons of products worth over 50 billion Euros (EUROSTAT, 2014).

2.1.4: Global market projection:

Cocoa beans are primarily used as raw material for chocolate and 90% of the global cocoa beans produced are consumed for chocolate production. Global production of cocoa beans during 2015 was 4.7 million metric tons. The international market prices of cocoa are very volatile and change with demand and supply. The high prices in 2015 led to lesser profits in grinding which in turn forced grinding companies to close their operations at various places.

Cocoa beans have captured the attention of consumers from around the world, due to fast growth of chocolate confectionery market, which is the major factor driving the market growth. Other than chocolate confectionary, other market factors stimulating the market growth include increasing disposable income among middle class and increasing popularity of cocoa based products like cocoa beverages and cocoa powder. However, disfunctions in the cocoa production regions due to the commodity price fluctuation, pest and diseases, low productivity, high dependence on seasons and environmental conditions and high cost of farm inputs are restraining the supply of cocoa.

The market can be broadly segmented into the organic cocoa bean market and inorganic cocoa bean market. Currently, the market is dominated by inorganic cocoa bean, however, in the coming years the demand for organic cocoa beans is going to increase globally (Prnewswire, 2017).

The world cocoa market distinguishes between two broad categories of cocoa beans: "fine or flavour" cocoa beans, and "bulk"or "ordinary" cocoa beans. As a generalization, fine or flavor cocoa beans are produced from Criollo or Trinitario cocoa-tree varieties, while bulk cocoa beans come from Forastero trees. There are, however, known exceptions to this generalization. Cacao nacional (Cacaoyer trees) in Ecuador, considered to be Forastero-type trees, produce fine or flavor cocoa. On the other hand, Camerounian cocoa beans, produced by Trinitario-type trees and whose cocoa powder have a distinct and sought-after red color, are classified as bulk-cocoa beans. The share of fine or flavor cocoa in the total world production of cocoa beans is just under 5% per annum. Virtually all major activity over the past five decades has involved bulk cocoa.

The global market value of cocoa beans is expected to increase significantly in 2019. European cocoa processing is expected to grow at the rate of 2.6% while chocolate and cocoa liquor are expected to grow at 2.4% and 3.8%, respectively (*DAWN DFID, 2017).* Demand for cocoa powder and chocolate in the world's second largest economy of China will likely increase by 5% and 4% respectively in 2017/18 (Proshare, 2017). There is steady room for growth of cocoa production in Nigeria if the country is well positioned for it. Demand for post-processing cocoa products (butter, powder, cake, and paste) is also tracked, but it is measured in nominal dollar value of imports, rather than volume of cocoa beans consumed.

2.1.5 Considerations for meeting demand: quality criteria

To access the European market for cocoa beans, suppliers must meet international quality standards. They are particularly high within the specialty segment for fine-flavor cocoa beans. Cocoa of Excellence mentions the following factors defining the quality of cocoa:

- Good trees (genetics)
- Well cared for and grown in a suitable environment
- Pods correctly harvested
- Good practices to keep the trees healthy and free of pests and diseases
- Optimum fermentation and drying protocols specific to the type of beans

High-grade (fine flavor) cocoa beans are generally of higher quality than common-grade cocoa beans, as their distinctive flavor is popular among manufacturers of high-quality chocolate. Fine flavor beans are usually produced from trees that contain the genetics of *Criollo* and/or *Trinitario* cocoa-tree varieties. Common grade (bulk) cocoa beans for mass production are genetically derived from *Forastero* trees.

To moderate the initially bitter cocoa flavor and to develop the typical cocoa flavor, the beans are fermented. Cocoa grading differs across producing and consuming countries. Standard practices have been set by the international cocoa trade associations. The grading of cocoa depends on the fermentation process.

- Well fermented cocoa beans: less than 5% mold, less than 5% slate and less than 1.5% foreign matter.
- Fairly fermented cocoa beans: less than 10% mold, less than 10% slate and less than 1.5% foreign matter.

In the light of growing opportunities in the global cocoa and chocolate markets with demand in China alone growing to about US$4.3bn and the global market projected to grow to more than US$170 billion in 2019, it becomes imperative for the Niger Delta region of Nigeria to be well positioned to take advantage of the opportunities the market affords (DAWN, 2017)

2.2 Nigeria and Niger Delta Cocoa Sector

In 2016, agriculture accounted for 24.4% of Gross Domestic Product (GDP) (PwC, 2017). The sector is highly concentrated on crop production, which

accounts for 90% of output. Fishery, forestry, and livestock, account for the remaining 10%. In spite of this, the country's agricultural potential is high, because Nigeria has 82 million hectares of arable land, and so far only 34 million hectares have been cultivated (Oni, 2011). With government's renewed focus on diversification through import substitution, as well as Nigeria's large and growing population, agriculture is increasingly becoming important as a source for consumer and industrial demand.

The agriculture sector is still largely underdeveloped, primarily because the focus is on production, rather than on enhancing value addition across value chain segments. For instance, analysis from cocoa barometer suggests that in the production of a bar of chocolate, only 6.6% of the value is in the bean production, while the remaining is in the processing, marketing, and retail segments of the value chain (PwC, 2017), most of which is done outside of Nigeria.

2.2.1 Nigeria cocoa production and exports:

Cocoa is the most important export crop and the single largest foreign exchange earning non-oil commodity in Nigeria. About 90 per cent of cocoa produced is exported as dried cocoa beans and the rest processed locally, with most of that for export in the form of cocoa paste and butter. About 71% of Nigeria cocoa bean export is destined to The Netherlands while UK is responsible for 11% (United Nations Commodity Trade Statistics Database 2014). Cocoa accounted for more than 30% of Nigeria's agricultural export and generated a total of $774.6M in 2016, of which $83.6M came from the exportation of cocoa derivatives cocoa butter and cocoa paste (see the summary in the Table 1 below).

Table 1: Nigerian Exports of Cocoa Products (in dollars)

	2013	2014	2015	2016	2017
Cocoa beans	492,353,469	576,875,024	451,997,825	691,069,207	661,014,631
Cocoa butter	103,759,070	124,084,168	73,715,723	70,708,492	67,750,664
Cocoa paste	31,244,933	19,171,013	17,082,910	12,944,536	23,933,800
Total	**627,357,472**	**720,130,205**	**542,796,458**	**774,722,235**	**752,699,095**

Source: Global Trade Atlas

In the early years of independence the Nigerian cocoa market was a monopsony, a situation where one buyer - a marketing board - controlled a large proportion of the market. The 1980's structural adjustment policies (SAPs) imposed by the International Monetary Fund (IMF) and the World Bank recommended that the government dissolve the ineffective marketing board in order to liberalize cocoa marketing and trade, and allow improved cocoa output and pricing.

Cocoa was a major agricultural export crop and a top foreign exchange earner in the 1950s and 60s. Prior to the discovery of crude oil in commercial quantities in the 1970s, Nigeria was the world's second largest producer of cocoa. Average cocoa production declined from 420,000 tons in the '60s to 170,000 tons by 1999. The production data between 2001 and 2017 is depicted in figure 1 below, which shows much cyclicality, but also a general increase in exports.

Figure 1: Nigeria Cocoa Exports (in tons)

Nigeria cocoa production in the past 17 years has witnessed some volatility. The main conclusion is that overall production is fairly flat, with peaks and valleys due to the cyclicality of cocoa tree production, and weather conditions.

Following the El Nino weather pattern accompanied by extreme dryness and harmattan, exports recorded an all-time low of 168,040 in 2015. This left a bitter taste for producers. It could be that there was more production, but the prices were so low that there was limited incentive to harvest or export. But in 2016 and 2017 with the devaluation, high price incentives to get every last bean harvested in order to maximize access to hard currency may have accounted for the increases.

Since Nigerian production statistics only show 225,000 in production in 2017, other explanations are required for the total export of 300,000 mt in 2017; much of this export might have been because of informal imports from Cameroun for re-export because of the high prices in Nigeria due to the forex crisis and proximity to Nigeria. Despite the weather challenges in 2015/16, the longer term prospects remain largely promising due to growing global demand.

Box 3: Nigeria Cocoa Market

- About 71% of Nigeria cocoa beans exports are destined to The Netherlands while UK is responsible for 11% (United Nations Commodity Trade Statistics Database 2014).
- Cocoa accounted for more than 30% of Nigeria's agricultural export and generated a total of $691M in 2016.
- Nigeria generated $83.6M from the exportation of cocoa derivatives also in 2016.
- Between 2010 and 2014, Nigeria's cocoa exports declined by 37.9%, but has rebounded since the devaluation.
- Licensed Buying Agents (LBAs) are the major

2.2.2 Nigeria cocoa production:

Nigeria's cocoa is cultivated on (estimated) 800,000 hectares of land and makes up 5% of global cocoa production (Abayomi, 2017). It is produced by an estimated 300,000 cocoa farmers, two-thirds of whom live in south west Nigeria and 40% in the Niger Delta Region. The majority of them inherited farms with trees that are more than 25 years old with declining production.

Prone to disease, maintenance of cocoa farms is labor intensive and requires the use of expensive chemicals to keep black pod disease at bay. Cultivation is a delicate process and trees are sensitive to changing weather conditions such as excessive rain or drought which negatively affects yield per hectare.

The important cocoa growing states in Nigeria are Ondo, Cross River, Osun, Ekiti and Abia. Others are Edo, Oyo and Ogun states; and Ondo is rated the largest cocoa producing state. Ondo and Cross River states are reported to contribute approximately 72% of Nigeria's yearly cocoa output in the past three years.

The cocoa industry has significant potential but is still underperforming. For instance, in the South West and South-South regions, thousands of acres of fertile lands suitable for cocoa cultivation are currently idle and wasting away.

Production of cocoa commences with the selection of suitable land for production and some of the options in the acquisition of a suitable land for production entails:

- Purchase of land considered suitable for cocoa production;
- Hiring of land for a minimum period of five years and upper limits of 50 years or 100 years;
- Inheritance of plantations.

Most of the cocoa farms in the Niger Delta producing states are diversified farms. Cocoa is grown with other tree crops such as plantain which are used as cover crops / nurse plant when the cocoa trees are young, usually established 6 months before cocoa seedlings transplanting; and it's a common sight to also observe oil palm, kola trees, avocado pear, cashew and 'Ogbono' trees (Irvingiagabonensis). Some arable crops can be grown with some cocoa along the furrows and open patches such as maize and yams. The essence of most of this type of agroforest practice and diversification is to prevent total crop failure, diversification of income and because the lands are fragmented and the farmer uses the system as a food security measure for the family.

Between 2002 and 2007 National Cocoa Development Committee (NCDC) distributed inputs for cocoa farming to farmers at 50% subsidy. The Committee also raised 62 million high yielding early maturing hybrid seedlings – enough to plant 56,000 hectares of new cocoa fields (Abayomi, 2017).

Farmers are responding to rising international market prices for cocoa and reports indicate a potential increase in production resulting from adoption of improved production practices to meet the UTZ certification requirements. There are indications that farmers are willing to rehabilitate abandoned farms and to increase area under production. Production has however been hampered by the inability of the Cocoa Research Institute of Nigeria to meet demand for seedlings, and utilize adequate mechanisms for distributing improved varieties of cocoa to farmers.

A study of technical efficiency of cocoa production in southwest Nigeria showed that more than 80% of cocoa farmers in the region had more than 10 years of cocoa farming experience and were relatively technically efficient in their use of resources although they were largely resource constrained. The study report also explained that labor constituted the highest cost of cocoa

production and that it would likely determine the viability and profitability of cocoa production. The report concluded that there is potential to minimize inputs to maintain current production levels and/or maximize output at current input levels in southwest cocoa production although technical efficiency was found to be high at 0.8126. A critical factor that affects technical efficiency was reported as the age of cocoa trees (the older the trees the less efficient), education of farmers (the better educated and inform the more efficient due to likelihood of adopting progressive farming practices) and land area cultivated (better to increase yield and efficiency). The report recommended sustained improvements by planting younger trees to replace aging ones to raise technical efficiency.

It has been estimated that there can be a 15 – 30% rise in cocoa production if more fertilizer is used in cocoa production. Nigerian cocoa farmers use a lot less fertilizer than farmers in Ghana where production was increased from 650,000 to 1 million tonnes in one season (2011/2012). Farmers in Nigeria were introduced to fertilizer usage in 2012/2013 season.

Many NGOs and donor organizations including USAID are supporting on-farm capacity development for farmers to improve productivity and quality. Researchers have also been supported through the Cochran Fellowship and Borlaug training programs to build knowledge and skills. However, yield improvement continues to be constrained by poor farm management, inadequate extension services, low farm input utilization, farmers' reluctance to replant old trees and slow uptake of new technology.

On the average, a single cocoa tree produces between 20 and 30 pods, which are the oval-shaped yellow/orange when ripen for harvest. The standard spacing of cocoa is 3mx3m leading to 1,111 plant population per ha. Each pod contains about 20 to 50 seeds, known as cocoa beans. On average about 25-30 pods gives 1 kg of marketable cocoa beans. The standard weight of a dried cocoa bean is one (1) g but one of the LBAs reported of lower weight of 0.87g in C/River state. The main and minor seasons of cocoa in Nigeria is between September and February; and March and May respectively.

The Nigerian cocoa production trend in the last eighteen years is summarized in the Table 2 below and depicted with graph in figure 2 (DAWN, 2017 and computation from field data).

Table 2: Nigeria cocoa production trends

Year	Production (tons)	Year	Production (tons)	Year	Production (tons)
2000	145000	2006	184000	2012	225,000
2001	149000	2007	222000	2013	238,000
2002	141000	2008	242000	2014	248000
2003	181000	2009	254000	2015	195,000
2004	195000	2010	236000	2016	200,000
2005	195000	2011	236000	2017	225,000

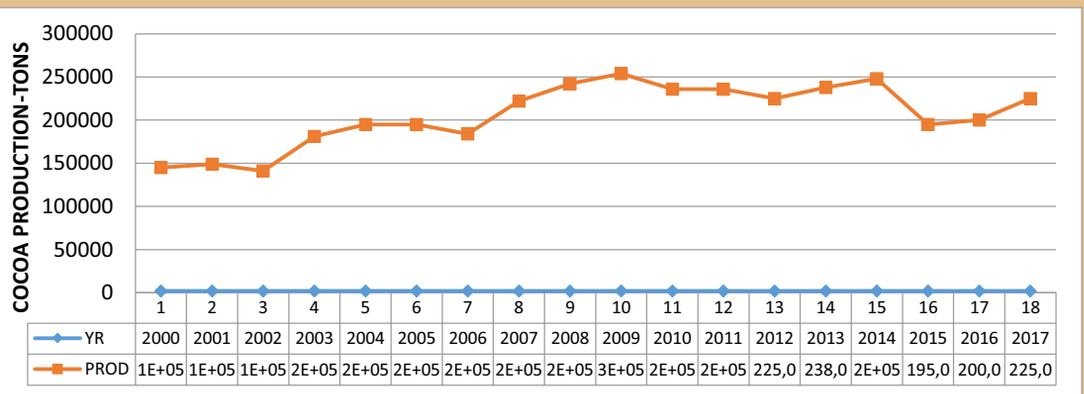


Figure 2: Nigerian Cocoa Production Trend

2.2.3 Cocoa production in the Niger Delta:

Over 90% of the cocoa in the Niger Delta is harvested from old cocoa plantations, planted over 40 years ago. From KII results, 70% of farmers in the Niger Delta are planting or establishing new plantations yearly ranging from 100 to 500 hybrid seedlings. In Cross Rivers there is a new group of entrants, retirees and civil servants, in cocoa production. All the farmer groups except in C/River state complained of low survival rate of the new planting leading to yearly replanting of the same plot for a period of 3 years.

At harvest, a ripe cocoa pod is identified when the green pod begins to turn slightly yellow. After harvesting, the pods are broken and the beans removed. Two most common methods of fermenting cocoa after they have been broken are the heap method and the tray (Box) method. Although the tray method has been shown to be better in cocoa bean fermentation in the study area, most farmers prefer the use of the heap method because it is the traditional method and the materials are within reach, while the tray method is more expensive and less available for most farmers. Another traditional fermenting method was discovered in Etung LGA, C/River state where farmers have adapted the heap method with the use of sacks made from Nylon materials (such as used 50kg rice bags). Cocoa beans in these bags are tied and left to ferment 5-6 days.

The summary of primary processing activities carried out by the producers, gathered during the field study is summarized in the Table 3 below:


A typical cocoa farm in Agborkim, Cross River State

Table 3: Production practices in the Niger Delta

Activities	Issues	Remarks
Time of harvesting	Greenish yellow	Over-ripening of pods affects weight because of increasing fibrous. Commence August/Sept in main season.
Frequency	15 -20 days interval	90% using 15 days while 10% using 20 days.
Means of harvesting	Go to hell & Cutlass	
Time of pod breaking	2-4 days	70% using 3days, 18% using 4days while 12% using 2days
Pod breaking method	Wood or cutlass	70% using wood while 30% used cutlass
Fermenting method	Heap & Box	95% using heap while 5% using box. Heap method involves turning the beans alternate day.
Period of fermenting	5-6 days	Fermenting below 4 days affects quality in the area of flavor and colour.
Method of drying	Sun	Sun drying on raised platform in Edo and Abia states. Sun drying on tarpaulin/mat and/or flat cemented area in other states.
Length of drying	5-6 days	
Bagging method	Jute	Once the beans are well dried and mouldy beans are removed and the beans are ready to be weighed, bagged (in carbon free jute bags) and kept in store houses awaiting transportation to the market.
Weight of dried beans/ha	520 – 650 kg	Yield from farmers under sustainability programme. Baseline yield ranges between 350-400kg.

Source: Field data, 2018

According to the Cocoa production survey 2007 report submitted to the National Cocoa Development Committee (NCDC) by the Cocoa Research Institute of Nigeria (CRIN) in 2008, the six cocoa producing states in the Niger Delta have a total of 1,994,000 ha out of the 3,094,000 ha of land potentially suitable for cocoa production in Nigeria, representing 64.45%. The six Niger Delta states had 336,965 ha out of the 639,348 ha cultivated in Nigeria, representing 52.70%. There is a lot more land that could be suitable for cocoa production, so there is plenty of room for expansion.

The Niger Delta offers excellent climate and soil conditions for cocoa production (see Annex 3). Three of the six cocoa producing states in the Niger Delta are among the major producers in the country, and the region accounted for 207,204 MT out of the total 225,000 MT graded cocoa beans in the country in 2017 season (ICCO Quarterly Bulletin of Cocoa Stat, Vol XLII No. 3, 2017).

Table 4: Land suitable, cultivated and available for cocoa in Nigeria, and recent output

State	Suitable (ha)	Cultivated (ha)	Available (ha) (uncultivated with cocoa)
Ondo	326,000	149,687	176,313
Cross River	775,000	123,747	651,253
Edo	485,000	57,259	427,74
Abia	21,000	4,230	16,770
Akwa Ibom	27,000	1,892	25,108
Delta	360,000	150	359,850
Total	**1,994,000**	**336,965**	**1,657,035**

Source: Nigeria Cocoa Production Survey (CRIN 2007)

As seen in Table 4 above, Cross River State has the most land suitable for cocoa production (775,000ha), followed by Edo State (485,000ha), while Abia State has the least (21,000 ha). In Cross River and Edo States, some portions of this potential land had been released for oil palm estate plantations. However, in terms of cultivation of suitable land, Ondo State has the highest area (149,687ha) followed by Cross River State (123,747ha), while Delta State has the least (150).

2.2.4 Production on State Basis:

Figures obtained from the States Produce department for the period 2014 – 2017 show that Ondo State recorded the highest production throughout the period. It is closely followed by Cross River State, while Akwa Ibom has the least (Table 5 below).

Table 5: Graded cocoa bean production in five leading states of the Niger Delta.

STATE	Total area cultivated (ha)	2014/15 (MT)	2015/16 (MT)	2016/17 (MT)	Total (MT)
Ondo	149,687	61,766	76,676	89,171	227,613
C/ River	123,747	60,766	75,157	85,125	221,048
Edo	57,259	28,621	30,330	29,729	88,680
Abia	4,230	2,114	2,241	2,196	6,551
A/Ibom	1,892	946	1,002	982	2,930
ND TOTAL	336,965	154,213	185,406	207,203	546,822
NIGERIA	**1,994,000**	**195,000**	**200,000**	**225,000**	**620,000**

Source: Nigeria Cocoa Production Survey (CRIN 2017) and
Produce Department of the Ministries of Agriculture in the Niger Delta states.

The trend analysis shows that the volumes are increasing steadily from our two main states, while the other three are relatively constant. Despite that Ondo State is marginally leading C/River in graded cocoa beans output, one striking feature in Cross River state is that the cocoa farming has developed a positive social status among the youth in the state, especially in Etung and Ikom LGAs, which is stimulating in-flow of youths in Cocoa farming in the state with the support from the government.

According to Nkang N.M et al, (2009), comparism between three cocoa production management systems showed that 'lease-managed' farms had the highest return on investment, followed by farmer 'owner-managed' farms. Share-cropped farms were the least profitable for farmers. But all three farming systems were profitable. The study recommends that given the high benefits relative to costs involved in cocoa production irrespective of management system, investments in cocoa production can be increased by providing expanded access to cheap and flexible credit and land, which have been presented as limiting factors in cocoa production based on the descriptive statistical analysis.

2.2.5 Cocoa value addition in Nigeria:

Nigeria is yet to fully capitalize on the full value of its cocoa production, as most of the beans are sold unprocessed. The National President of the Cocoa Association of Nigeria,Sayina Riman, reports that out of over 20 cocoa processing companies in the country, about 14 have been closed in the past 10 years (Guardian 2018). According to him, these closed down processing companies were employing more than 600 managerial and special skilled services per company, and with the multiplier effects, about 6,000 persons would be servicing the entire value chain per company. In 2014, there were eight cocoa processing factories operating below capacity and one concessioned factory, with a combined installed capacity of 173,000 metric tons. Table 6 shows the profile of the nine processing companies.

Table 6: PROFILE OF COCOA PROCESSING FACTORIES IN NIGERIA AS AT 2014

SN	NAME & LOCATION INEFFICIENTLY FUNCTIONAL	DATE	INSTALLED CAPACITY MT)	CAPACITY UTILIZATION %	UTILIZATION IN CAKE/ POWDER (MT)	ANNUAL EXPORT (US$ M)
1	CADBURY COCOA PLANT (STANMARK COCOA), ONDO TOWN	1991	15,000	70	13,260	$24.36
2	COCOA PRODUCTS (ILE-OLUJI) LTD, ILE-OLUJI	1984	15,000	40	7,560	$13.92
3	COOP COCOA PRODUCTS /OLAM NIGERIA, AKURE	1989	16,000	85	17,136	$29.58
4	MULTI-TREX INTEGRATED FOOD, IBAFO-OGUN STATE	2005	65,000	10	7,617	$3.48
5	FTN COCOA PROCESSORS, IWO RD, IBADAN	2007	10,000	10	1,260	$3.48
6	TULIP COCA PROCESSING COMPANY, LTD, IJEBU-MUSHIN	2008	12,000	90	13,608	$31.32
7	ALFA SYSTEM COCOA PROCESSING, AKURE	2009	10,000	5	630	$1.74
8	PLANTATION INDUSTRIES LTD, AKURE	2013	15,000	10	1,260	$3.48
	REVIVING					
1	COCOA PRODUCTS INDUSTRIES LTD, EDE		15,000			CONCESSIONED
	TOTAL		**173,000**			

Source: DAWN 2017 & field data 2018

In 2018 only six of the cocoa processing industries were functional: Tulips Cocoa, Cocoa Products (Ile-Oluji) Ltd, Stanmark, Alfa System & Communication Ltd, Agro-Traders (Plantation Industry), and Cocoa Products Industries Ede. Apart from Tulips and Cocoa Industries Ede, the others are located in Ondo State. It is interesting to note that Tulips Cocoa and Cocoa Products (Ile-Oluji) Ltd upgraded their installed capacity to 30,000 tons and 15,000 tons respectively by 2017. The combined cocoa beans consumption of the five functional companies is 50,000 tons. These processing companies are often faced with challenges such as insufficient capital, irregular power supply, high cost and poor quality of cocoa beans, and ineffective and unfavorable government policies.

2.2.6 Challenges

Over the past three years, cocoa futures were volatile due to supply shocks from unfavorable weather conditions that stalled production in major growing countries. As such, cocoa prices reached a peak of $3,390/metric ton in 2015/2016 season (up from an average of about $2,000) due to supply shortages from major West African exporters – particularly, Ivory Coast, Ghana, Cameroon and Nigeria. In 2018, they have fallen back to about $2100.

Even now the harsh weather condition in dry season is serious setback for the establishment of new plantations in Niger Delta producing states, especially Ondo and Edo States, where there is a serious dieback of established seedlings. The replanting rate of new cocoa trees by smallholders is as high as 80% due to very low survival of seedlings in the first two years after planting. This is highly discouraging to many farmers, leading to diversification by some into oil-palm plantation (Primary data from study, 2018).

Another challenge is that many intermediate processing companies were forced out because they did not have the international market linkages required to sell the processed goods – butter, liquor etc.

2.2.7 Opportunities for production:

The cocoa economy accounts for over 30% of Nigeria's agricultural export earnings (DAWN, 2017). In 2017, at an average price of N750,000/MT, about N186 billion was pumped into the national economy. This contribution stands cocoa out clearly as one of the major potential economic drivers of the country. Cocoa can also be linked to some specific contributions and advantages:

- Long term and substantial sources of income for thousands of small-holders and others involved in trade, transport, processing and export of cocoa beans;
- The Cocoa economy engenders broad-based income and multiplier effects;
- Farming system diversification - cocoa tolerates a number of neighbor trees and has a positive environmental effects such as biodiversity;
- There has not been any loss of jobs along the cocoa value chain; instead the sector has served as a shock absorber mitigating the effects of the global meltdown;
- The international price of cocoa has risen appreciably in recent times, translating into higher farm gate prices for our farmers.

At the 2014 cocoa value chain addition meeting in Abuja, Nigeria, the then Minister of Agriculture and Rural Development, Dr. Akinwumi Adesina stressed the need to develop the cocoa sub-sector in order to create more jobs. According to him, “our aim is to capture twenty-two percent of the global market by expanding our current production from 250,000 metric tons to 500,000 metric tons by 2015”. This is a political statement because it is not feasible to double production in one year. He added that government has distributed over 1.4 million hybrid cocoa pods across the country which translates to about 50 million seedlings. These seedlings are enough for farmers to plant 46,000 hectares of new cocoa plantation. The yield capacity of the distributed hybrids can produce five times the yield of what farmers get today which is 2.5 tons as against 0.5 tons. This variety can achieve full potential in terms of harvest 5 years after planting.

"Three of the six cocoa producing states in the Niger Delta are among the major producers in the country, and the region accounted for 207,204 MT out of the total 225,000 MT graded cocoa beans in the country in 2017 season (ICCO Quarterly Bulletin of Cocoa Stat, Vol XLII No. 3, 2017)."

Chapter 3:

DATA ANALYSIS AND DISCUSSION

3.1 Socio-Economic Characteristics of Cocoa Farmers in Niger Delta States

A multistage sampling technique was used to select 130 cocoa farmers among the ten clusters visited across five Niger Delta States (Ondo, C/River, Edo, Abia and A/Ibom). A well-structured questionnaire administered through interview schedules was used to collect data from the respondents. Data were analyzed using descriptive statistics analysis. The result showed that, cocoa farming in the study area was dominated by males (81%) and 99% of them were 30 years old and above, with household size ranging between six and nine persons per household. To further disaggregate in the two leading cocoa producing states, this age distribution of the farmers showed that 60% of the farmers in Cross River fall within the age range of 30 to 50 years, whereas in Ondo state 65% of the farmers are in age bracket of 51 and 80 years. So Ondo cocoa farmers are much older.

Most respondents were small scale farmers with farm sizes ranging from one to five hectares; and only 6% of the respondents had no formal education. The relatively fair literacy level spurs most of them (83%) to participate in GAP training. The application of GAP positively reflected in the average yield in the study by 49% from 350kg to 520kg per ha.

About 70% of farmers sourced funds from their personal savings in all the management systems identified. Consequently insufficient fund was rank high as limiting factor for their business expansion.

The prominent Cocoa production management systems in Ondo State are two that is,

- 60% of the farms are Owner-managed farms while
- 40% are sharecropped farms

But Cocoa production in Cross River State has three identified management systems which are:

- Owner-managed farms (15%)
- Lease-managed farms (35%) and
- Sharecropped farms (50%)

3.1.1 Cost and Returns Analysis of Ondo State Smallholders

A cost and return analysis of two cocoa production management systems in the Ondo State cocoa major local government areas of Idanre and Ondo West indicates average Total Variable Cost TVC) of N232,700 and N196,200 for Owner managed farm and Sharecropped farm respectively. The average yield from the Owner managed farm and Sharecropped farm are 550kg and 400kg per ha respectively (reconfirming findings from the 2008 study). With the selling price of N600,000 per ton of cocoa beans the revenue accrued to the two management systems are N330,000/ha and N240,000/ha respectively. Therefore, the Gross Margin for Owner managed farm and Sharecropped farm are N97, 300 and N43, 800 respectively.

The trend of the selling price per ton in the last 3 years has the same pattern across some of the clusters visited but not the same amount as summarized in the Table 7 below.

Table 7: Sales price trends

Cluster/State	2015 price	2016 price	2017 price	Remarks
Ile-Oluji, Ondo	N550,000/ton	N1,200,000/ton	N630,000/ton	
Akure South, Ondo	N500,000/ton	N1,000,000/ton	N600,000/ton	
Owo, Ondo	N750,000/ton	N1,100,000/ton	N600,000/ton	
AgbokimEtung, C/R	N512,000/ton	N1,040,000/ton	N600,000/ton	
Ikwuazo, Abia	N500,000/ton	N600,000/ton	N450,000/ton	The disparity in price may be due to distance to major exporters in Lagos axis and low volume of production.
Bende, Abia	N600,000/ton	N1,100,000/ton	N500,000/ton	
Ikono, A/Ibom	N512,000/ton	N900,000/ton	N450,000/ton	

The rationale for why the price of cocoa dropped so much in 2017 from 2016 is the Naira stabilization, so people were not bidding up the price of an export product in order to access the hard currency.

3.1.2 Cocoa costs of production

Table 8: A TYPICAL BUDGET FOR A HECTARE OF COCOA FARM DEVELOPMENT IN ONDO STATE

Cost of Establishing One Hectare of Cocoa Farm through Seedlings					
SN	OPERATIONS	UNITS	QUANTITY	RATE (₦)	AMOUNT (₦)
1	Under-brushing	MANDAYS	22	2,500	55,000.00
2	Selective tree felling	MANDAYS	10	2,500	25,000.00
3	Cross-cutting/packing of felled trees	MANDAYS	45	2,500	112,500.00
4	Marking and pegging	MANDAYS	15	2,500	37,500.00
5	Holing and planting of plantain suckers	MANDAYS	30	2,500	75,000.00
6	Holing and planting of cocoa seedlings	MANDAYS	30	2,500	75,000.00
7	Cost of plantain suckers	PIECES	1,040	100	104,000.00
8	Cost of cocoa hybrid seedlings	NUMBERS	1,040	200	208,000.00
	Grand Total of Cocoa Field Development (Scenario A)				**692,000.00**

Note

i. It is assumed that the soil of the farm has been tested and has been found suitable for cocoa planting
ii. Land acquisition cost is not inclusive in the above estimate
iii. Planting space of 3.1m x 3.1m is adopted in the above estimate
iv. Cocoa nursery is not prepared, rather cocoa seedlings are procured
v. The above estimate only covers up to the planting stage, hence, the cost of farm maintenance is not inclusive
vi. The consultancy/administrative charges (which is normally 10% of the total) is not included in the cost

Table 9: ESTABLISHMENT OF A HECTARE OF COCOA IN C/RIVER STATE FROM SEED NURSERY

S/N	ITEMS	Quantity	Unit Cost ₦	Total Cost ₦
1.	Procurement of hybrid Amazon Cocoa Seedlings	1,110 Seedlings (44.4Pods)	200/Pod	8,880
2.	**Agro Chemicals**			
a.	Insecticide(1.5Ltr X 5)Cypermethrin	1.5Ltrs	2000	3,000
b.	Fertilizer (bag of NPK 12: 12: 17 : 2mg, Rock Phosphate &Kieserit)	3Bags	6000	18,000
c.	Soil treatment (delfuran)	1Sachet	600	600
3.	Clearing to cropping level & Removal of all stumps & Debris	$5M^2$	1000	5,000
4.	Pegging, Lining and earth filling of Polybags for receiving of Cocoa Seeds @ 1m X 10m X 0.5m between bed rows	1BED	2,500	2,500
5.	Planting of Cocoa Seeds in Polybags	1,110	3.00	3,330
6.	2nos. workforce employed for watering & maintenance of Cocoa nursery bed for 4Months	1BED	10,000	20,000
	Sub-Total			**61,310**
	Stage 2:			
1	Land clearing and selective felling of trees for Cocoa Seedlings	1HA	35,000	35,000
2	Clearing of debris and Burning of cleared Debris	1HA	7,000	7,000
3	Parcellation of the area	1HA	5,000	5,000
4	Cutting of pegs, lining and Pegging at planting intervals of 3m X 3m within a hectare of 1,110 planting spots for Cocoa seedlings.	1HA	18,000	18,000
5	Holing and planting of plantain suckers	1HA	25,000	25,000
	Cost of 1,110 plantain suckers	1,110	100	111,000
6	Conveyance of ball-of-earth seedlings (Cocoa) from nursery beds to field of planting	1HA	10,000	10,000
7	Trans-Planting of Cocoa Seedlings to the field planting spots	1HA	20,000	25,000
	Sub-Total			**236,000**
	Grand Total of Cocoa Field Development (Scenario B)			**297,310**

The disparity in cost of establishing 1ha of cocoa in the two states was mainly due to cost of cocoa seedlings. Another reason is the high cost labor. For example, land clearing, selective felling of trees and clearing of debris which attracted labor cost of N42, 000 only in C/River state; gulped up N192,000 in Ondo state for similar operations.

3.1.3 Cocoa Break-Even Analysis

The basic idea behind doing a break-even analysis is to calculate the point at which revenues begin to exceed costs. For scenario A, that is, for 1 Hectare of Cocoa Farm Development in Ondo State, the 7th year is the break-even point. The detailed analysis is in the table 10 below.

Table 10: Cocoa break even analysis in Ondo State

Timeline		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year7	Year 8	Year 9	Year 10
Yield/Ha	Mt/ha	0	0.3	0.35	0.45	0.6	0.75	0.9	1	1.2	1.5
Sales Price	N/mt		600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
Total Revenue	**N/ha**	**0**	**180,000**	**210,000**	**270,000**	**360,000**	**450,000**	**540,000**	**600,000**	**720,000**	**900,000**
Cumulative Revenue		**0**	**180,000**	**390,000**	**660,000**	**1,020,00**	**1,470,000**	**2,010,000**	**2,610,000**	**3,330,000**	**4,230,000**
Cost											
Initial cost of development		692,000									
Maintenance cost/Mature upkeep	N/ha		159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300
Harvesting & primary processing	N/ha		7,500	7,500	10,000	10,000	15,000	15,000	15,000	15,000	15,000
Logistic & incidental cost	N/ha		2,500	2,500	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Total Cost	**N/ha**	**692,000**	**169,300**	**169,300**	**174,300**	**174,300**	**179,300**	**179,300**	**179,300**	**179,300**	**179,300**
Cumulative Cost		**692,000**	**861,300**	**1,030,600**	**1,204,900**	**1,379,200**	**1,558,500**	**1,737,800**	**1,917,100**	**2,096,400**	**2,275,700**
Cumulative Profit/Loss	Naira	-692,000	681,300	640,600	-544,900	-359,200	-88,500	**272,200**	**692,900**	**1,233,600**	**1,954,30**

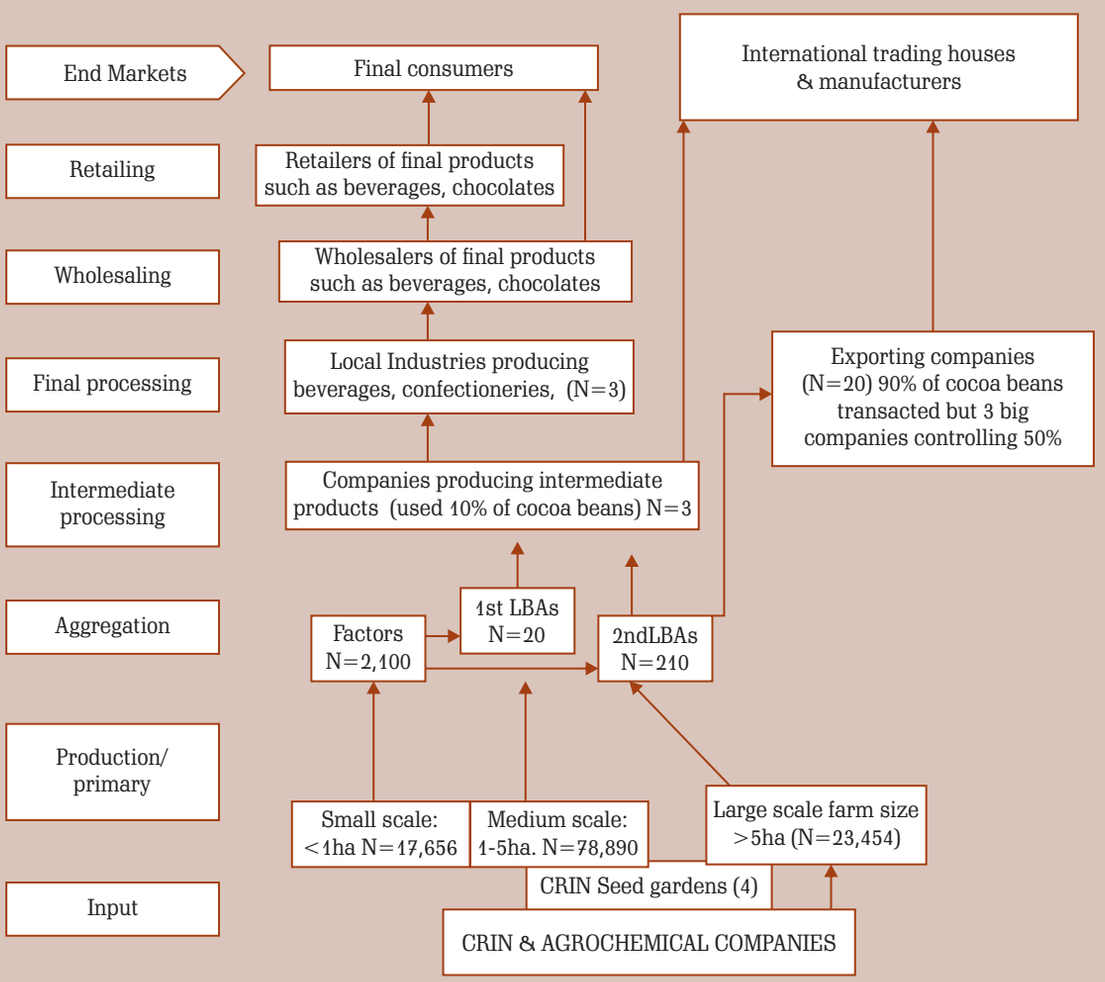
From the table above it can be ascertained that profitability will be experienced from the seventh year.

3.2 The Value Chain Map

Value chain analysis is a tool that facilitates investigation of business activities in terms of new value-adding opportunities in relation to existing values with regards to sourcing of factors of inputs, production, processing and delivery of the finished product. However PIND uses a full value chain approach which maps out the sector and identifies the different end markets (by segment) the different channels which supply those end markets, the different types of market actors at each functional level, and the relationships between the various market actors as they buy and sell the product. The Value chain map is a strategic snapshot of the value chain, differentiating the various channels through which the product flows from raw material to the end markets.

The map also shows all the different core stakeholders and the relationships between the various channels. The structure of the value chain map begins from input supplying, production and primary processing, aggregation, intermediate processing, final processing, wholesaling, retailing, and end user. The map also shows aspects of the market size, and the cost of the product as it changes value up the chain.

Figure 3: Niger Delta Cocoa value Chain map



Processing of cocoa into cocoa derivatives is the highest value adding activity in the cocoa value chain, with the potential to generate significant export revenues. During the study the team was able to meet with many of these key actors and support organizations, across 8 states of the Federation. The details are in annexure 1.

The roles of the key players in the cocoa value chain are summarized in the box 1 below:

The key players in the cocoa business

3.3.1 Input Suppliers - Seeds

Cocoa Research Institute of Nigeria (CRIN) became autonomous in the early 1960s and in continuation of earlier role while existing as the Nigerian substation of West Africa Cocoa Research Institute (WACRI) has engaged in cocoa breeding to fulfill her mandate to develop improved cocoa planting material in Nigeria. In 1972, the second national cocoa breeding programme through selection resulted in "Establishment Ability Elites". These varieties in addition to better yield were adaptable to marginal and drought prone areas.

The institute has the capacity to produce 1 million pods from released hybrid TC 1-8; and it takes 5 months to raise the beans from pods into seedlings, but with Filia fertilizer the duration can reduce to 3 months. The average yield of the improved seedlings is 1500-2300 kg per ha/annum; farmers can achieve this yield through capacity building of farmers on Good Agricultural Practices (GAP). Other characteristics of improved hybrid cocoa tree seeds are:

- High quality butter
- Early bearing of 2 years or 18 months
- High yielding with lower inputs
- Highly adaptable to cocoa ecology
- Good cocoa quality traits
- High ability to resist to major pest and disease

Upon release of TC1-8, CRIN distributed 601,000 pods to 14 states (Funded by the government during Cocoa Transformation Agenda -COPTA but the fund did not cover monitoring. Each pod contains 25 seeds; and 50,545 farmers got the pods but not all of them planted them. In addition, the Institute had been training and certifying nursery operators (operators usually pay for the training) including training of cocoa producing state CDU on request.

3.3.2 Seed Gardens owned by CRIN and State Government

As of 2010 there were 18 government owned seed gardens in Nigeria with average annual pod production of 564,331.

Table 11: Seed Gardens owned by CRIN and State Government

State	Number of seed gardens	Area of land (hectares)	Year planted	Varieties
Ondo	7	106.46	1956 – 1978	C69 x C20 Trinidad; CRIN Series I & II IT, CRIN Elite; NA 32 x PA 35 C75 x C18; C75 x C25; C75 x C14; C77 x C27 C75 x C25; C74 x C24
Osun	3	16.2	1961 – 1979	C77 x C27 C74 x C18 C77 x C27
Oyo	5	229.98	1964	F2 and F3 Amazon, CRIN Elite. Clones planted in CFC plots areT65XT10/15, T86/2X T22/28, T86/2XT9/15, P7XPA150, and P7XT60/887.
Edo	2	31.5	1967	Trinidad and F3 Amazon
Cross River		4.4	1975	F3 Amazon and CRIN Elite F3 Amazon
Abia	1	28.5	1971 – 1986	

Source: Cpparesearch, 2017

Seed gardens use open or hand pollination method for hybrid pod production. 471,866 pods were produced 2008/2009. Farmer pod demand was not estimated.

Following the release of 8 new cocoa hybrids with proven genetic qualities in 2011, CRIN established 2 hectares of cocoa seed gardens in each of 14 states identified as cocoa growing. These new gardens make improved cocoa hybrids available to farmers and promote vegetative propagation. Some of these seed gardens / substations for easy access to improved seeds/seedlings released, are Owena in Ondo state, Ajassor in C/River state, Umohoru in Edo state, Ibeku in Abia state, -Achaja in Kogi state and Mambila plateau in Taraba state.

To save cost, many farmer groups buy the hybrid cocoa pods from seed gardens and establish the seeds nurseries and later distribute the seedlings to members at subsidized rate ranging from N50-100/seedling. Presently only four CRIN seed gardens are functional in the whole Niger Delta therefore there is challenge of access to hybrid cocoa varieties to majority of smallholders.

3.3.3 Agro-chemical Companies:

The agrochemical marketers' participating in the FGD with farmers groups are Harvest Field Industries Ltd, Syngenta, Bayer Sciences, Saro Agrosciences and Jubaili (Agrotech). The Ridomil is a product of Syngenta while Ultimax Plus is one of the products of Harvestfield. There is competition among agro-chemical companies to the benefit of farmers because of production of different brand of fungicides and insecticides in packages that is easily affordable and some even build capacity of farmers in safe use of these chemicals at their own cost. Generally, farmers in the Niger Delta region procure agro-chemicals, especially fungicides, insecticides and herbicides, from agro-dealers at agrochemical retail shops. Pesticide products are packaged in big bags and small, more convenient (50-200g) sachets that farmers can readily afford and use with limited guidance.

Pesticides and fertilizers are supplied by the input company through the Exporters, Licensed Buying Agents or the Cooperative Multipurpose Union to

the farmers as well as direct purchase from agro-dealers.

3.3.4 Production/Primary processing:

Harvesting and processing techniques are also important in harnessing the "fine" qualities of fine flavor cocoa beans. During harvesting, ensure you only take the ripe fruits. During processing, ensure all cocoa beans are fermented and dried homogenously. Cocoa beans should be shipped shortly after harvest because extended storage (> 6 months) may result in losses due to the relatively high humidity in tropical environments.

These cocoa farmers are disaggregated into farm sizes under cultivation as contained in the Table 12 below and depicted in pie chart:

Table 12: Disaggregation of Cocoa Farmers in the Niger Delta base on farm size

State	< 1ha	1-5ha	>5ha	TOTAL
ONDO	8,490	30,775	12,735	**52,000**
C/RIVER	3,046	27,415	9,138	**39,599**
EDO	1,500	7500	1000	**10,000**
ABIA	2,368	6,157	474	**8,999**
A/IBOM	1,892	6,203	105	**8,200**
DELTA*	360	840	2	**1,202**
TOTAL	**17,656**	**78,890**	**23,454**	**120,000**

Source: Computation from Field Data, 2018

Given the economics of production it does not make economic sense for potential investors to engage in farms of less than 1ha. For those who do, most 1 ha holders easily migrate to higher holding within few years.

The characteristics of the farmers who are producing on 1-5ha (category B) are as follows:

- They belong to cooperative union or association;
- They have received training on Good Agricultural Practices (GAP) and Good Business Practices (GBP);
- 60% of the farms in this category B are Owner-managed farms while 40% are sharecropped farms in Ondo state;
- Some of them are involved in UTZ certification program;
- They all have formal education ranging from primary to tertiary; and
- Only a few have farm records

Cocoa production in Nigeria is dominated by smallholder farmers who cultivate small plots of land, an average size of 2.5ha. The Gross Margin for Owner managed farm and Sharecropped farm are N97, 300 and N43,800 respectively.

The cocoa farmers in the major cocoa producing states in the Niger Delta are summarized below.

Table 13: Distribution of cocoa farmers in the Niger Delta

	ONDO	C/RIVER	EDO	ABIA	A/ IBOM	Remarks
LG producing Areas	14	12	10	4	6	
Number of cocoa farmers	52,000	39,600	10,000	9,000	8,200	Source: State Ministries of Agriculture

(Source: Data from Niger Delta state Ministries of Agriculture, 2018)

***Farmers accessing credit from processors*:**

Cocoa farming is a labor-intensive activity, therefore many farmers engage yearly labor with wages ranges between N75, 000 to N100,000 per person per year apart from free accommodation and feeding assistance; and they work 5 days per week. And some farmers organize themselves into informal groups, in order to help each other with harvest and postharvest practices, and also helps farmers to facilitate access to inputs credit e.g. Tonikoko CMU, Bamikemo-Ondo state enjoys inputs credit from Tulip cocoa processing company (FDG, farmers' interviews, 2018).

Participation in certification program:

Another example of cooperation between farmers is their participation in cocoa certification schemes such as Fairtrade, Rainforest Alliance and UTZ certified e.g. Alade Idanre CMU through Tulip (FGD, 2018). The premium by Alade Idanre CMU through Tulip in 2016 was N15,000 per ton of graded cocoa. To comply with requirements of the cocoa certification programs, farmers' groups need to follow specific standards on cultivation of cocoa as well as on social aspects of farming (e.g. no use of child labor).

State level highlights

During the interaction with Permanent Secretary (PS) Ministry of Agriculture Ondo State and his cabinet, the following data were highlighted:

- There were 52,000 Cocoa farmers in Ondo state as at 2012 (Secretary, Cocoa Revolution Program);
- 20,000 cocoa farmers benefited from GIZ Farmer Business School (FBS) from 10 LGAs according by Director, ADP;
- 22,000 farmers benefited from the IITA implemented, Sustainable Tree Crop Program STCP funded by the then National cocoa development committee NCDC as the pilot was done in 6 LGAs of Ondo State-Funded by the World Bank and Bill Gates foundation (2003-2005); and
- The only plantation owned by the state is in Oda which is 1,744 ha and under rehabilitation by cocoa Revolution Project.

Cross River state also has four plantation estates in Etung LGA and these are:

- ABCE Cocoa estate – 2,000ha
- ICE cocoa estate – 1,600ha
- CIR forest cocoa estate – 400ha
- Aboinata Cocoa farms – 800ha

These plantations are leased at a maximum of 2 ha to a farmer on 2 years basis at N300,000 per ha.

The vision of Cross River state government is to become the leading cocoa producing state in Nigeria with the mission statement of 7% increase in yearly cultivation/expansion with acquisition of 2,000ha contiguous land from Akamkpa, Obudu and Boki.

Primary processing:

Smallholder producers also carry out the primary processing functions of breaking the pods, and initial fermentation and drying as detailed in table 3, above. Key considerations in the primary processing are the method of breaking the pods,

the cleaning, the technology for fermentation, and the thoroughness of the drying which can have impact on the quality of the cocoa beans for sale.

3.3.5 Aggregation

Aggregation is the purchase and bulking of cocoa beans together from producers. Aggregation is done by Licensed Buying Agents (LBAs) who have a network of farm gate agents (factors), who purchase from farmers.

1st level LBAs: They are generally referred to as 'Factors'. They aggregate on a small scale and sell to 2nd level LBAs. They do not have direct link with exporters or intermediate processors. In most cases they work as local agents to 2nd level LBAs.

2nd level LBAs: There are two types of 2nd level LBAs – Cooperative Multipurpose Unions and Individual LBAs. The CMU aggregate from their members and other farmers, using their own "Factors'. The CMUs do have a direct relationship with exporters and intermediate processors. They sometimes receive a credit facility from the exporter.

In general, the factors or 1st level LBAs do not provide any value addition besides mere aggregation for 2nd level LBAs who do some drying and cleaning prior to delivery to the exporters.

Aggregation of cocoa beans involves many logistics costs in addition to the purchasing cost of beans from farmers. These costs are summarized by MD Toaj Ltd Ikom (Individual 2nd level LBA category), Cross Rivers, as well as Manager, Alade-Idanre Cooperative Multipurpose Union (CMU 2nd level LBA category). These costs are based on Trailer load (480 bags of cocoa beans) is summarized in Table 6:

Table 14: Summary of Aggregation Cost of Cocoa Beans

SN	COST ELEMENTS	CHARGES ON 30 TONS TRAILER LOAD (N)	
		ALADE-IDANRE, CMU, ONDO STATE	LBA, TAOJ LTD IKOM, C/RIVER STATE
1	Haulage	NA	24,000
2	Commission/Youth settlement	NA	210,000
3	State Produce Department (Organization, Stamping, Seal & Grading paper)	150,000	150,000
4	Loading of truck	36,000	18,750
5	Field Secretaries	60,000	NA
6	CAN Fee	4,000	24,000
7	Stakeholder/ LGA	4,000	5,000
8	Evacuation	NA	9,000
9	PR along the road/Driver Union	4,000	5,000
10	Registration of store	25,000 (Grading on behalf of exporter with this amount)	55,000 LBAs grade in their own names)
	TOTAL VARIABLE COST	**283,000**	**500,750**

Source: Computation from Field Data, 2018

Individual 2nd level LBAs provide in ex-store delivery to the exporters, delivering their consignment to the exporter's warehouse, which is helping them to generate more short-term employment for their boys. Meanwhile, CMU 2nd level LBAs do on-store delivery in which the Intermediate processors/exporters will send their trucks to the CMU stores to evacuate the consignment. The purchasing price is also different: for ex-store delivery the price is N810,000 per ton in May, 2018 while N750,000 for on-store delivery.

Other major activities in aggregation function are re-cleaning and re-drying to meet exporters' expectations. The activities usually carried-out by 2nd levels LBAs to improve quality of cocoa beans are as follows:

- Training of factors or field secretaries as applicable and farmers
- Cleaning and filtering of dirty cocoa but cleaning cost being borne by suppliers/farmers through discount price
- Acquiring of "Aquabouy" to measure moisture content and the acceptable moisture content is between 7 and 8%. Each Aquabouy cost N600,000 per unit as far back as 2016.
- Only 2nd level LBAs have installed Dryer powered with generator to dry cocoa beans with high moisture content. The Dryer with generator cost N3.5million.
- Electronic weighing scale is also acquired by 2nd LBA level to ensure accuracy in measurement before delivery to exporters.

In Ondo state, 1st level LBAs account for 90% of sales, while the remaining is sold via the 2nd level LBAs (cooperatives) to exporters and processors. Price is determined by an open market system. Most LBAs receive credits from exporters or processors to supply the dry cocoa beans. In some cases, the LBA provides credit in the form of inputs to the farmers at the beginning of the season to secure orders. There is a progression of prices for cocoa beans from one level of aggregation to the next with a minimum of N10,000 per ton.

The cost and returns analysis of aggregation according to LBA levels is summarized in the Table below. It highlights the fact that the 2nd level LBAs earn 50% more than the CMUs by capturing a higher sales price that more than offsets the cost of transport.

Table 15: Profitability analysis for CMU vs 2nd Level LBAs per truck load

SN	ITEMS	CMU 2ND LEVEL LBAs	INDIVIDUAL 2ND LEVEL LBAs	REMARKS
A	Cost Composition:			
1	Purchase cost of 30 tons cocoa beans by Agents (N630/ton)	18,900,000	18,900,000	
2	Logistics / incidental cost from from farmers' locations to LBAs store	283,000	500,750	
3	Agents allowance (Factors or Field Secretaries)-N10,000/ton	300,000	300,000	
4.	Cleaning cost (N1,260/bag or 2kg/bag)	604,800	604,800	480 bags = 30 tons (1bag≐64kg)
5	Delivery cost to Exporter	Nil	360,000	
	TOTAL COST	20,087,800	20,665,550	
B	Income Computation:			
	Selling price of 30 tons	22,500,000	24,300,000	On-store by 1st level LBAs to Exporter at N750,000/ton; while ex-store by 2nd level LBAs to Exporter at N810,000/ton.
C	Net Returns (B-A)	2,412,200	3,634,450	

Source: Computation form Field data, 2018

3.3.6 Intermediate Processing:

This involves the transformation of cocoa beans into cocoa powder, cocoa butter and cocoa cake. The dried cocoa beans are cleaned, roasted and processed into several valuable products, the main ones being:

- Cocoa butter: This is a creamy-colored edible vegetable fat with a cocoa flavor and aroma that is extracted from cocoa beans. Cocoa butter makes up more than 50 percent of the weight of cocoa beans and is used to make chocolate, as well as several ointments, toiletries and pharmaceutical products.
- Cocoa Cake is the light brown or reddish-brown substance that remains after cocoa butter is extracted from cacao beans. They are often sold as a final product in the form of cocoa powder (or cacao) which is a major ingredient in beverages and drinks across Africa. Cocoa solids are also used to make chocolate, chocolate syrup and other chocolate-based confections.
- Very few cocoa beans are processed (i.e. 10% of annual cocoa bean production) into these derivatives in Nigeria. An estimated 90% of these cocoa derivatives are exported, with the remaining 10% utilized by local beverage manufacturers. With

good top quality cocoa beans, the percentage of intermediate products is: Cocoa liquor – 80% and Waste-20%. From cocoa liquor, 38% will be Cocoa butter while remaining 42% will be Cocoa cake. Cocoa butter prices jumped 28 percent this year to as high as $8,200 a tonne on strong demand and tight supply after global grinders cut processing to reduce inventory. The price of cocoa liquor for chocolate production is $3,500 to $5,000 per tonne while the natural and alkalized cocoa powder price is between $1200 and $2200 per tonne.

Alkalisation is predominantly used for the production of cocoa powder, to produce powders of different colours and flavours. The process is generally regarded as an added value step which is proprietary to each supplier. Sometimes, alkalised cocoa mass or alkalised cocoa powder is used in chocolates to introduce specific flavours. Cocoa mass usually contains some 47 56% of cocoa butter and this is physically extracted to produce both cocoa butter and powder. Most cocoa butter is made from alkalised cocoa mass and retains some of the flavours from the cocoa beans, alkalising and roasting stages. For the production of cocoa powders with fat contents of less than 10% extraction is needed and CO2 and/or other solvents can be used. Other techniques such as cryogenic grinding of cocoa mass are available to produce cocoa powders with fat contents exceeding 30%.

The process flow chart as the cocoa enters the processing plant, as revealed by AGM, Engineering Service of Cocoa Products (Ile-Oluji) Ltd is summarized below:

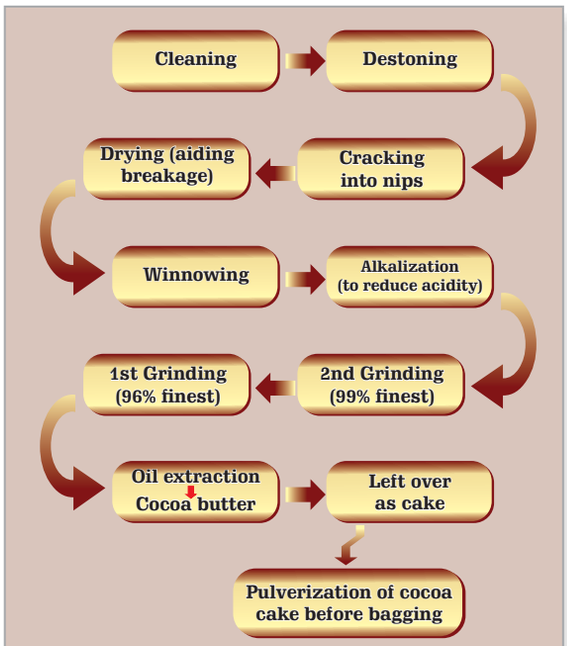


Figure 4: Cocoa Beans Processing Flow Chart

Most local processing companies are grappling for survival and, indeed, most have closed down operation. As recently as 10 years ago, Nigeria had 20 cocoa processing companies, but only five are still in operation and one concessioned (Ede Cocoa Products co) to Chinese Company. The few functional processing factories are linked to transnational corporations within a backward integration arrangement. The closure of the processing companies was due to higher cost of operations especially erratic electricity supply, which constitutes 40% of production cost. They also suffer from illegal multiple forms of taxation during transportation of raw materials (beans), and high interest rates (25%). The few surviving ones are linked with foreign partners who often provide them with direct loan facility, with less than 5% interest rates. The high cost of spare parts importation also constitutes a bottleneck. Other macroeconomic issues responsible for their closure include exchange rate instability, and the elimination of the Export Expansion Grant (which had essentially subsidized the exporters).

The study team visited four of the intermediate processors during the study; various data gathered from two with higher capacity utilization are summarized in the Table 15 below:

Table 16: Processing company characteristics

	Tulip Cocoa, Ijebu-Mushin	Cocoa Products (Ile-Oluji) Ltd
Location	Ogun State	Ondo State
Ownership	100% Ecom Trading	90% private ownership with substantial part of this held by Skye Bank and Bank of Industry and 10% government.
Installed Capacity / year (metric tons)	15,000	30,000
Utilized Capacity (metric tons)	90% (13,500 tons)	40% (12,000 tons)
Products	- 10,800 tons of cocoa liquor. - 5,130 metric tons of cocoa butter. - 5,670 tons of cocoa cake.	- 9,600 metric tons of cocoa liquor. - 4,560 metric tonnes of cocoa butter. - 5,040 metric tonnes of cocoa cake.
Challenges	1. High cost of electricity- the company runs permanently on diesel (40% of production cost) 2. Multiple taxation during transportation of cocoa beans 3. Non continuation of implementation of policy by government (EEG) and custom refusal to honor it. 4. Poor access road especially to the Apapa ports, and also to raw material areas 5. Poor investment in new planting in South West region but C/River state government encouraging new planting among youths	-State Produce Department nonchalant attitude and compromising to quality of cocoa beans -Difficulty in competing with Foreign companies because of high interest rate of 25-32% while the Foreign companies are getting loan from their countries with 3-5% interest rate. -Exchange rate instability -Spare parts being imported at high cost -High cost of energy (30% production cost)

3.3.7 Trading and Exporting

The beans are packed in bags and stored until shipment. The buyer conducts a quality check to accept delivery. Nigeria is using 2nd hand jute bags from Ghana to pack the cocoa beans because no company is producing jute bags in Nigeria.

Nigeria has 20 exporters, but only 3 of these exporters control 50% of Cocoa beans export. This is due to a combination of their financial capacity, connection with international buyers, long years of established relationship and trust with international buyers. The exporters bought mostly from 2nd level LBAs at N810,000 per ton in May, 2018. The exporting price of cocoa beans after final cleaning and bagging is influenced prevailing world price either at London or New York. Some of the exporters like Starlink Global have direct relationship with grinders abroad.

3.3.8 Final processing/ Wholesaling/ Retailing

To make chocolate, cocoa liquor is mixed with cocoa butter, sugar, and sometimes milk. The mixture is poured into conches – large agitators that stir and smooth the mixture under heat. The liquid chocolate is then tempered and poured into block molds, sometimes mixed with other ingredients such as nuts and or dried fruits, for sale to confectioners, dairies or bakers. The final product is packed, boxed and shipped to wholesalers in the country who supply to retailers before it gets to the final consumer. Most of these activities take place in Europe and America. The little bit final processing that happens in Nigeria ends up mostly as beverage and is just for the domestic market. The only cocoa derivative used by the foremost Nigerian companies (Nestle, Cadbury, Promasidor and Friedsland) is cocoa powder.

In Nigeria the three main final processors are Nestle, Cadbury and Promasidor of Cowbell Industry, which process finished product (chocolate, cocoa powder for drinking, cocoa butter for cosmetics) for sale into the Nigerian market. They are integrated into all processing functions, including intermediate processing of beans into butter, liquor and paste before they produce the cocoa powder from which they make chocolate and beverages.

Nestle Nigeria uses only one cocoa intermediate product, cocoa powder,for its cocoa finished products. The company is buying this cocoa powder from Cocoa (Products) Ile-Oluji Ltd, Tulip Ijebu-Ishin and recently from Stanmark. Nestle's does not import raw material to produce Milo, Choco-Milo and Ready to Drink (RTD); it uses 100% local cocoa. The method of purchasing this cocoa powder is forward contract on 6 months basis generally referred by company as H1 (1st 6months of the year) and H2 (2nd 6 months of the year) and the average price paid was N800,000 per ton.

According to Nestle's Purchasing manager, Nestle uses the highest quantity of cocoa powder in Nigeria compared to other companies. Other companies using cocoa powder are Cadbury, Promasidor and Friedsland. Ovaltine is only packaged in Nigeria, using all imported ingredients.

The yearly incurred cost on cocoa powder by a typical final processing company in the last three years and equivalent quantity of cocoa powder is the Table below. This shows that overall production is fairly constant.

Table 17: A typical example of cocoa powder purchases by a final processor

Year	Cost incurred (N)	Quantity of cocoa powder purchased (MT)	Equivalent in cocoa beans (MT)	Remarks
2015	3.5 billion	4,375.0	10,416.7	A yearly average of 9,970 MT cocoa beans.
2016	3.25 billion	4,062.5	9,672.6	
2017	3.3 billion	4,125.0	9,821.4	
TOTAL			**29,910.7**	

Source: Computation from Field data, 2018

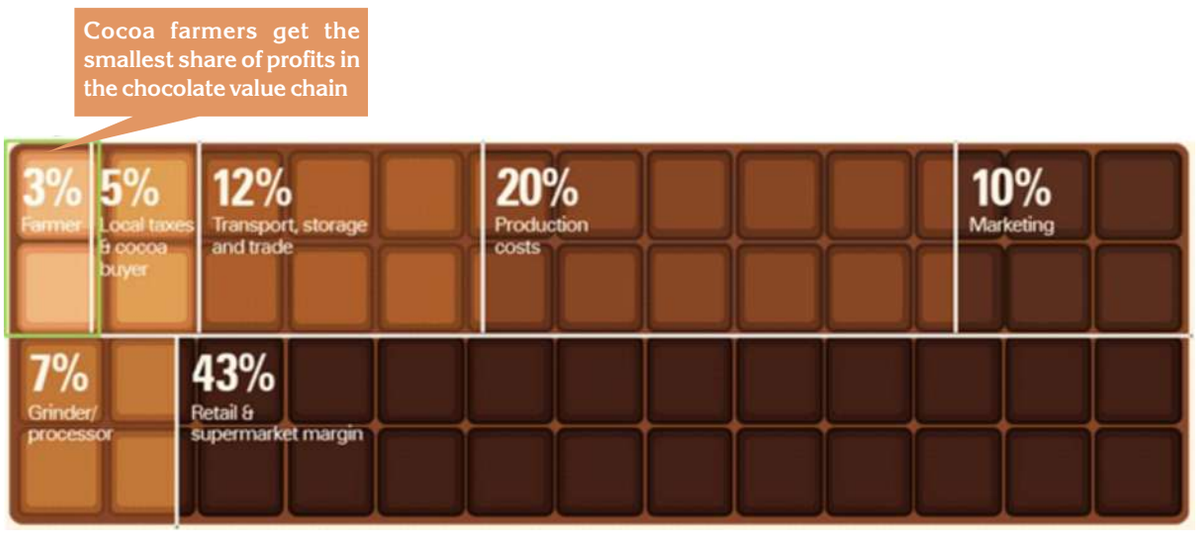
The end volume of finished products in 2017 and market outlets are summarized in the Table below, demonstrating that 95% of the production is for the local market with limited exports:

Table 18 : End Volume of Finished Products nad Market Outlets

Finished Product	End Volume in 2017	Market segment
Milo	360,000 tons	Nigeria – 95%; EU & America – 5%
Choco- Milo	32,000 tons	Nigeria – 90%; EU & America – 10%
Ready to drink (RTD)	8,000 tons	Nigeria – 100%
TOTAL	**400,000 TONS**	

Stanmark Cocoa Processing Company Limited is a subsidiary of Cadbury Nigeria Plc. Cadbury is Nigeria's foremost cocoa processing company. The Stanmark processes 12,000 MT of cocoa beans annually into derivatives such as cocoa butter, cocoa cake and cocoa powder. Cadbury uses the powder for beverages and sells the left overs to other companies within the country. Stanmark exports cocoa butter to Europe-Holland, Germany and France; through Olam and Armajaro. In Nigeria, Cadbury products targeting various consumers are Bournvita, Tomtom, Buttermint, Trident, Clorets and Chocolate 3n1.

The image below shows the share of the price of chocolates that reach the farmers. The reality is clear; the retailers and supermarkets are the big winners.



As a result of the little returns made by cocoa farmers in Africa over the past few years, many of them have become frustrated. Because the international cocoa industry now understands that it could collapse if African cocoa farmers run away from the business, governments, NGOs and the big chocolate companies are now increasing their efforts to make cocoa production more lucrative for African farmers.

3.4 Enabling Framework Conditions

Governments play an important role in shaping the conditions in which value chains operate, especially for export crops like cocoa. Government entities act as regulators in various ways including, but not limited to, export taxes (which penalize producers), business-related regulations, and subsidy policies. Governments also act as service providers, offering public extension or export promotion services. Policies that are cognizant of smallholder farmers' needs can be especially supportive for farmer organizations and prove to be mutually beneficial in terms of the public-private sector dynamic.

During the validation workshop, the recent government program for the sector came to fore as summarized in the Table below:

Table 19: Government of Nigeria Interventions in Support of Cocoa Sector

Area	Specific Interventions
Subsidies	Federal Government: sold 81,000 pods at N60, down from original cost of N300
Land	Opening up more forest reserves for cultivation and youth empowerment programs
Inputs	Buying chemicals and distribute at subsidized rate to farmers
Processing	Setting up cocoa processing factories in Ondo and Cross River States
Policy	Increased monitoring of interventions & government projects as well as inflow of agrochemicals

3.4.1 Policy decisions and measures

The Federal Government supports the cocoa value chain through several ministries and agencies, especially the Federal Ministry of Agriculture and Rural Development and Federal Ministry of Trade and Investment. The specific policy measures and initiatives below have an impact on the Cocoa sector, and include a mixture of input and price support.

National Cocoa Development Program and the National Cocoa Development Committee (2000):

The National Cocoa Development Committee was inaugurated in 2000 to coordinate the Cocoa Development Programme in 14 producing states.

The long term target of the programme was to achieve annual production level of one million metric by 2010 by facilitating the rehabilitation of 15,000 hectares of cocoa plantation annually. Improved/disease resistant varieties, assorted agro-chemicals and other inputs were thus distributed to encourage producers to replant with the aim to offset the effects of ageing cocoa plantations in the country. The specific objective include: improve cocoa farmer's income and diversify the foreign exchange earnings by increasing the cocoa production. This program failed to meet its objective as expected.

Export Expansion Grant:

Another scheme was the the Export Expansion Grant (EEG) which aimed to support active exporters expanding their international business. This could be via more exports of existing products in current and new markets. It was a post-shipment incentive designed to expand export volumes and improve global competitiveness of Nigerian products. This was done via: providing cost of production support to increase export volumes, creating job opportunities, and value addition to products. Under the scheme, Nigerian exporters could get a maximum 15% of their annual export value which could be used for the following: to pay all taxes (except paye), to offset government loans, to buy government bonds and can be transfer at one instance. This grant has since been discontinued in 2016 by the Buhari administration, but was an important driver of cocoa exporters until its elimination (and its termination was one of the main factors behind the exit of many exporters from the sector).

Cross-commodity Input Support: Fertilizer Policy

Aside from cocoa-specific input support policies, there are initiatives that influence cocoa production, although their specific impact cannot be quantified. Both state and federal governments can provide fertilizer to farmers as input support. Moreover, the National Investment Plan (NAIP) sets a target of 30% increase of fertilizer use in the period 2010-2015, with an overall demand expected to grow from 2.6 to 3.4 tons by 2015. There are three main initiatives within the NAIP actively targeted towards the increase in fertilizer use: (1) the Organic Fertilizer Development Program (OFDP) promotes the use of organic fertilizer though a Public Private Partnership (PPP) approach; (2) the Fertilizer Quality Control (FQC) project aims at increasing the quality of fertilizer used and distributed; and (3) the National Foundation Seed Multiplication aims at releasing high quality foundation seeds to certified producers. The impacts of this program are difficult to evaluate in the cocoa producing states of Niger Delta.

Regional Cocoa Initiatives

During the Abuja meeting of regional cocoa policies, in 2006, main regional cocoa producing countries representatives decided to increase local consumption of cocoa in their respective countries, through national campaigns for consumers' sensitization, and the development of alternative cocoa products. In the case of Nigeria, the Cocoa Research Institute has worked on the development of cocoa products including cocoa cream, liquor, bread, cakes and biscuits, together with the development of relative patent rights and resource mobilization to boost private investment in the sector and in the new products specifically. Only Cocoa Products (Ile-Oluji) Ltd had an acceptable product "Cocoa Powder" in the market; all other alternative cocoa products of CRIN are still in Institute's shelf.

Presidential Transformation Agenda (2011)

The overall goal of the Agenda was to define agriculture as a business, promote private sector investment in agriculture along with the development of private sector driven marketing organizations and the promotion of Incentive - based Risk Sharing for Agricultural Lending (NIRSAL). Cocoa is among the commodities (together with cassava, sorghum, rice, and cotton) for which a country-wide commodity-specific transformation plan was envisaged, particularly in the Southern States.

The specific goal of the cocoa transformation agenda was to rapidly increase Nigeria's

production of cocoa beans through a combined strategy of increased productivity and planting newer (and producing) trees. In spite of government intention to increase productivity, Banks prefered to lend to Cocoa exporters rather than farmers. Even the hybrid cocoa " TC 1-8" released by CRIN in 2011 were not available in the CRIN seed gardens for easy access by farmers.

3.5 Analysis of Previous Government and Development Projects on Cocoa

Given renewed interest in the development of cocoa and government decision to recognize it as one of the key sources of foreign earnings, PIND carried out a review of existing government and development partners' supports to the growth of the sector as part of recent CVC assessment in the Niger Delta. The intention was to explore the state of cocoa, focusing on Niger Delta of Nigeria. Attempts were made to aggregate production information and examine farmers' access to planting input and finance.

Farmers are responding to rising international market prices for cocoa and reports indicate a potential increase in production resulting from adoption of improved production practices to meet the UTZ certification requirements. There are indications that farmers are willing to rehabilitate abandoned farms and to increase area under production. Production has however been hampered by the inability of the Cocoa Research Institute of Nigeria to meet demand for seedlings, and utilize adequate mechanisms for distributing improved varieties of cocoa to farmers. Production has therefore fallen short of 2015 targets. A study on the effect of farm management practices on cocoa quality carried out in Ondo State concluded that Nigerian cocoa farmers receive low prices for their crops because of poor quality arising from inappropriate farm management practices.

The country is currently reported to be experiencing low and declining yields due to inconsistent production patterns, disease and pest attack, low levels of mechanization and ageing of cocoa fields. This is especially true in the Niger Delta states that contribute nearly 70% of national cocoa yields; MARKETS II claimed that yields increased from 0.40ton/ha to 0.59ton/ha, but this 50% increase in production does not flow through to the production figures due to the fact that the benefiting farmers are less than 10% of total producers benefited from their direct delivery support. Other reports also set production per hectare at 0.38 tonnes but these are reported to have declined to less than 0.3 hectares, mostly due to El Nino effect.

Along with other crops in Nigeria, cocoa farming is hindered by availability of credit to sustain or expand production. Shortage of credit for agriculture production is attributed to reluctance by banks given high risks associated with the sector. To address the challenge, the Central Bank of Nigeria set up some development finance to target agriculture; one of this is the Commercial Agriculture Credit Scheme designed to boost production of selected cash crops including cocoa. Despite this and other schemes, studies show that few cocoa farmers in Cross River State (6% of owner managers and 12% of lease managers). A study carried out in Ondo State reported that 58.5% procured credit in the 2009/2010 production season although 83.2% of these, obtained credit from produce merchants.

Evidence from documents reviewed demonstrate that in spite of Nigeria being considered a major contributor to cocoa production, the industry is precarious and requires strategic interventions if it is to become the productive resource that government wants to make it. Farmers, especially in the south west, farm very small holdings and are experiencing declining yields. Although it has been reported that they are willing to rehabilitate cocoa fields, they are poor resourced and have scant technical know-how or technology support.

3.6 Business Membership Organizations

3.6.1 Cocoa Association of Nigeria (CAN)

Cocoa Association of Nigeria (CAN) was established in 1986, replacing the scrapped Nigeria Cocoa Board (NCB). It was formed to meet the peculiar needs of cocoa farmers, stakeholders, development and others partners in ensuring the sustainability and development of the sector.

The Association is the private sector representative of Nigeria in all international organizations involved

in cocoa, viz, International Cocoa Organization, Cocoa Producers Alliance, Common Fund for Commodities, etc. Over the years it has prevailed on buyers of cocoa from Nigeria where issues have arisen bordering on quality, contract violations, trade regulations, government policies affecting cocoa marketing. The Association initiated the setting up of the National Cocoa Development Committee under the administration of Chief Olusegun Obasanjo in 1999. The seed money for the running of the NCDC also came from CAN through its members' Cocoa Buffer Stock Fund which was domiciled in the Central Bank of Nigeria. It was also the first to pay its counterpart fund for the running of the NCDC and remains the only stakeholder group to do so. The Association (CAN) is guided by a constitution registered with the Corporate Affairs Commission (CAC) as a Company Limited by Guarantee.

According to the Executive Secretary, Adewumi Olusegun, CAN represents Nigeria both nationally and internationally, being a member of ICCO since 1990. The CAN is headquartered in Akure and has desk offices at 14 Cocoa producing States as well as in Abuja. The registration of membership is categorized as follows:

Category	Registration fee (N)	Annual due (N)
Multinational	100,000	50,000
National	50,000	50,000
Farmers organization	30,000	20,000

3.6.2 Cocoa Farmers Association of Nigeria (CFAN)

CFAN was organized and registered with CAC in 2000 with headquarters at Akure, the Ondo state capital. It has 60 registered members across the cocoa producing states of the country. The registration is free except the annual dues of N2,000. Some of the benefits members derived from the association are information sharing in production and marketing, lectures/ training, as well as common voice as a pressure group.

According to General Secretary of CFAN, Adeola Adegoke, the association's vision is summarized as follows:

- To establish a Cocoa Resource centre
- To produce 98% premium cocoa
- Setting up a Networking Platform for farmers in Africa and Indonesia
- Setting up a Cocoa academy

There is currently no significant relationship between CAN and CFAN. However the two associations should be coordinating better. CAN is dominated by LBAs and processors and should provide an easy market for CFAN members. Better coordination among the two actors should lead to feedback mechanisms from buyers to producers in order to enhance overall quality of beans.

3.7 Relationships among Value Chain Actors

The results of the study indicate that the farmers have no awareness of sustainable production or certifications to motivate better producer price among farmers. Cocoa is a worldwide business. Direct access to international markets is impossible for farmers. Producers therefore must rely heavily on intermediaries for sales. Not surprisingly, the longer the value chain, the less profit is left for the first link: farmers. In addition, the longer the value chain, the more difficult it is for information on market specifications to flow through to the producers. So even within Nigeria, it is very fragmented with the farmers rarely knowing the people to whom the aggregators sell and the characteristics that they should be trying to deliver which will be the highest value.

An integrated markets approach, considering economic, social and environmental dimensions, is needed to improve cocoa sector competitiveness. The summary of the relationship is contained in the Table 18, below:

Table 20: Value Chain Actors and their Relationships

VC Actors	Nature of Relationships
Inputs suppliers and Farmers	• Mutually beneficial business relationship exist between the input suppliers and farmers. The input suppliers make farming inputs (agro-chemicals, fertilizers, farming implements etc.) available to farmers either on credit or cash basis. • Sometimes, the input suppliers provide technical training services (on how to use the inputs) to farmers directly and/or in collaboration with factors or agents, especially when new products are introduced.
Farmers and Local Buying Agents (including Factors and Agents)	• Business relationship exist between the farmers and LBAs (including Factors and Agents). The LBAs often take advantage of the farmers in weight of cocoa beans and/or prices. • Some LBAs provide interest free trade credit to farmers in exchange for cocoa beans during the peak season. • At times, the LBAs provide inputs especially agro-chemicals to farmers on credit. • Sometimes, the LBAs collaborate with input suppliers in training the farmers on use of chemicals.
Farmers and Commodity Traders and Processors	• Processors have the strongest incentives for good relations with cooperative farmers. They often train farmers on Good Agricultural Practices (GAP) and best harvest/post-harvest practices, especially those that are under the out-growers or certification programs. • Provide finance to farmers through the LBAs. • Provide inputs (especially agro-chemicals) either free or on credit to farmers either through the LBAs or farmers groups. • Provide other support to producers/farming communities under the corporate social responsibility, to build loyalty and trust for lasting business relationship and sustainability.
Local Buying Agents (including Factors and Agents) and Commodity Traders/Processors	• Mutually beneficial business relationship exist between the LBAs and Commodity Traders/Processors in the purchase and sale of cocoa beans. The LBAs buy cocoa beans from the farmers, aggregate it and sell to the Commodity Traders (beans exporters) and processors. A high percentage of the beans purchased by Commodity Traders (beans exporters)/Processors are sourced through the LBAs. • Commodity Traders (beans exporters) and processors most of the time advance cash to the LBAs to purchase beans from farmers. This is sometimes abused by the LBAs. • Issues bothering on quality of beans is mostly an area of concern between the two actors, especially, the processors.

Source: Value Chain Study, 2018

There is a general lack of coordination and trust between farmers and the LBAs. The farmers complain that LBAs pay less prices and use the wrong scales for measuring beans weight. They are also not happy that the credit given by LBAs prevent them from other market opportunities during the peak season. On their part LBAs complained bitterly about poor quality of beans resulting from inadequate fermentation, impurities and high moisture content, as well as side selling on the part of farmers who received trade credit from them.

The sector will benefit from a better coordination and cooperation by the market actors. There should be effective information flow from the exporters and processors through the local buying agents down to the farmers. This will ensure effective feedback mechanism that will specify standards in terms of quality of beans, prices and timeliness of delivery.

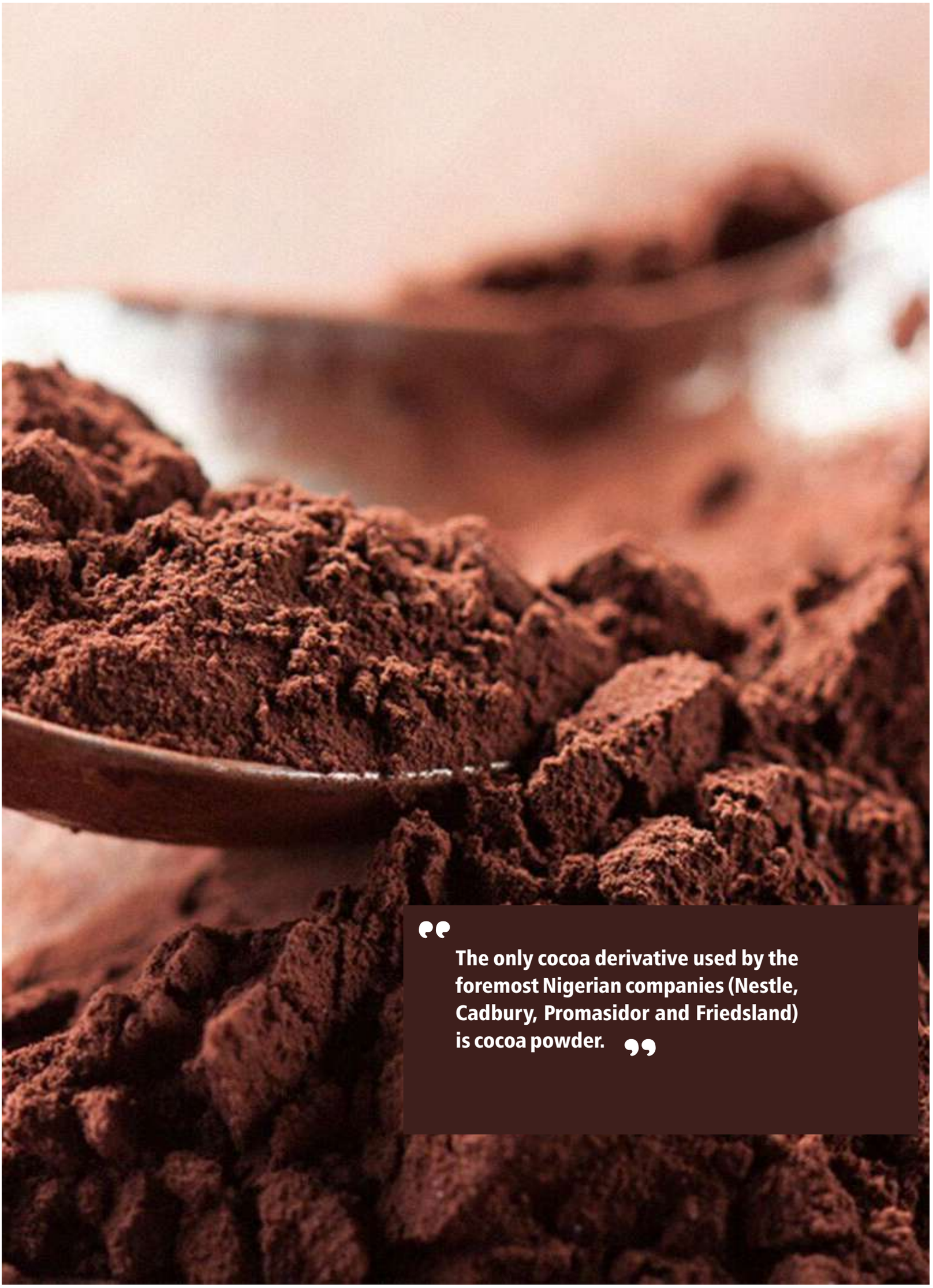
Farmers should change their behaviour through a combination of improved agronomic practices and an upgrade in primary processing. Such behavioral changes can occur through the development and introduction of private extension providers and linkage with input suppliers. The constraints around poor fermentation, high moisture content and impurities can be addressed with the introduction of improved technologies (drying equipment, fermentation box).

Table 21: Constraints, Suggested Interventions and Probable Partners

Value Chain Functions	S/N	Constraints	Suggested Interventions	Probable Partners
Exporting	1	• Discount pricing of Nigeria cocoa beans at international market due to its poor quality	Awareness creation on the negative effects of poor quality beans, long term commercial gains of good quality beans and development of reward systems for good quality cocoa	Star Link, CAN, Agro Traders, Bolawale Enterprises, Gbemitan Investments, Olam, LBAs
Intermediate Processing	2	• Poor quality cocoa beans (due to absence of beans certification) supplied by licensed buying agents leading to high cost of cleaning, drying and de-stoning		
Buying and Aggregation	3	• Multiple taxation, illegal levies and rent seeking affect LBA operations, leading to high cost of transaction	Advocacy campaign to reduce the high cost of doing business in the sector	LBAs, Processors and Exporters
	4	• Several layers/middle men including licensed buying agents and factors increase cost of transaction and reduction in farm gate margin		
Primary processing	5	• Sharp practices on the part farmers (inclusion of stones and impurities in the cocoa beans) leading to loss of income for LBAs	Access to technologies for harvesting, pod breaking, fermenting and drying Assisting in establishment and capacity building of association for the better coordination and campaign where no association is present	LBAs, Fabricators, BMOs, CAN, CFAN
	6	• Low pricing of poor quality cocoa beans and the use of bad weighing scales by LBAs result to loss of revenue on the part of farmers		
	7	• Poor harvesting, drying, fermentation practices by farmers resulting in slaty beans with high moisture content and discount pricing		

Production	8	• Existence of predominantly older trees leading to reduction in yield to 350kg	Demonstration of Better Management Practices and development of new farms and plantations Awareness creation on participation of certification programs	LBAs, Input Companies, Starmark, Plantation Industry, Cocoa Products, and BMOs
	8	• Limited lands • Government policies on land use not favorable • Increasing cost of labour reduces areas to be cultivated		
	10	• Lack of GAP reduces yield and affect quality of beans and increase in black pod diseases • Poor access to effective agro-chemicals approved for cocoa production		
Input	11	• Lack of access and unavailability of improved cocoa seeds	Introduction of new improved seedlings for propagation of new plantations and expansion of existing ones	CRIN, Input Companies, Agro dealers, BMOs
	12	• Poor awareness on the benefits of fertilizer application and lack of		
		access and unavailability of fertilizers	Access to fertilizers and crop protective products	

Source: Value Chain Study, 2018



> **The only cocoa derivative used by the foremost Nigerian companies (Nestle, Cadbury, Promasidor and Friedsland) is cocoa powder.**

Chapter 4:

STRATEGY FOR DEVELOPING THE COCOA SECTOR IN THE NIGER DELTA

4.1 Strategy for Developing the Cocoa Sector in the Niger Delta

The development of the Niger Delta cocoa strategy was structured as an inclusive, participatory, and transparent process to provide an in-depth analysis of the cocoa sector and to state issues and options for the PIND's future engagement. As an integral part of the strategy development process, the views of diverse stakeholders on key the challenges and opportunities facing the cocoa sector were sought. The result serves as a framework and a set of principles guiding PIND's future engagement in the cocoa sector, including specifying investment and advisory interventions that can maximize development outcome for communities and minimize adverse social and environmental impacts.

4.2 Vision and Strategy

Within 5 years, the cocoa industry in the Niger Delta will be characterized by improved linkages and communications between smallholder farmers and the processors and exporters, with common mutual incentives. The industry will have a strong supporting services providers delivering the inputs, extension, and technologies that smallholder farmers need to upgrade leading to increasing productivity and higher quality cocoa to meet market demand. The vision will be achieved by working in three strategic areas:

- Enhancing better coordination of the value chain by improving relationships between producers, aggregators (licensed buying agents and factors) and exporters to increase the efficiency of the value chain and the delivery of higher quality product to meet market demands through:
    - Developing better, win-win linkages and relationships between exporters, aggregators and producers
    - Awareness creation on the negative effects of poor quality beans, long term commercial gains of good quality beans
- Ensuring the quality of cocoa beans through improvements in primary processing and post-harvest activities (pod breaking, fermentation, drying) by introducing enhanced technologies and advocacy on the benefits of good quality beans via:
    - Introduction of improved processing technologies through demonstrations
- Increasing productivity and yield in cocoa plantations by working with input companies and agro dealers to demonstrate good agronomic practices through:
    - Access to improved seedlings (CRIN, Dealers) (long term impact)
    - Access to fertilizers and crop protective products (Harvest field, Jubaili)
    - Access to information and farmer education

4.3 Theory of Change

Stronger coordination and cooperation among cocoa value chain actors will lead to sharing of information and increasing efficiency, with small farmers and primary processors upgrading their practices. This will provide opportunities to address the main issue of poor cocoa bean quality. Interventions will be focused on developing and introducing private extension agents in the sector. A strong support market system will lead to upgraded practices including access to processing technologies, access to input suppliers and

improved agronomic practices. These behavioral changes will enhance the overall quality of cocoa beans, increase processing capabilities and attract better prices for exporters, buying agents and farmers.

Based on the situation prevailing in the market and identified constraints, the team came up with one or more interventions for each of these constraints with probable implementation partners for these interventions. These interventions were identified based on the discussion with the value chain actors, experience of the scoping team and team discussion.

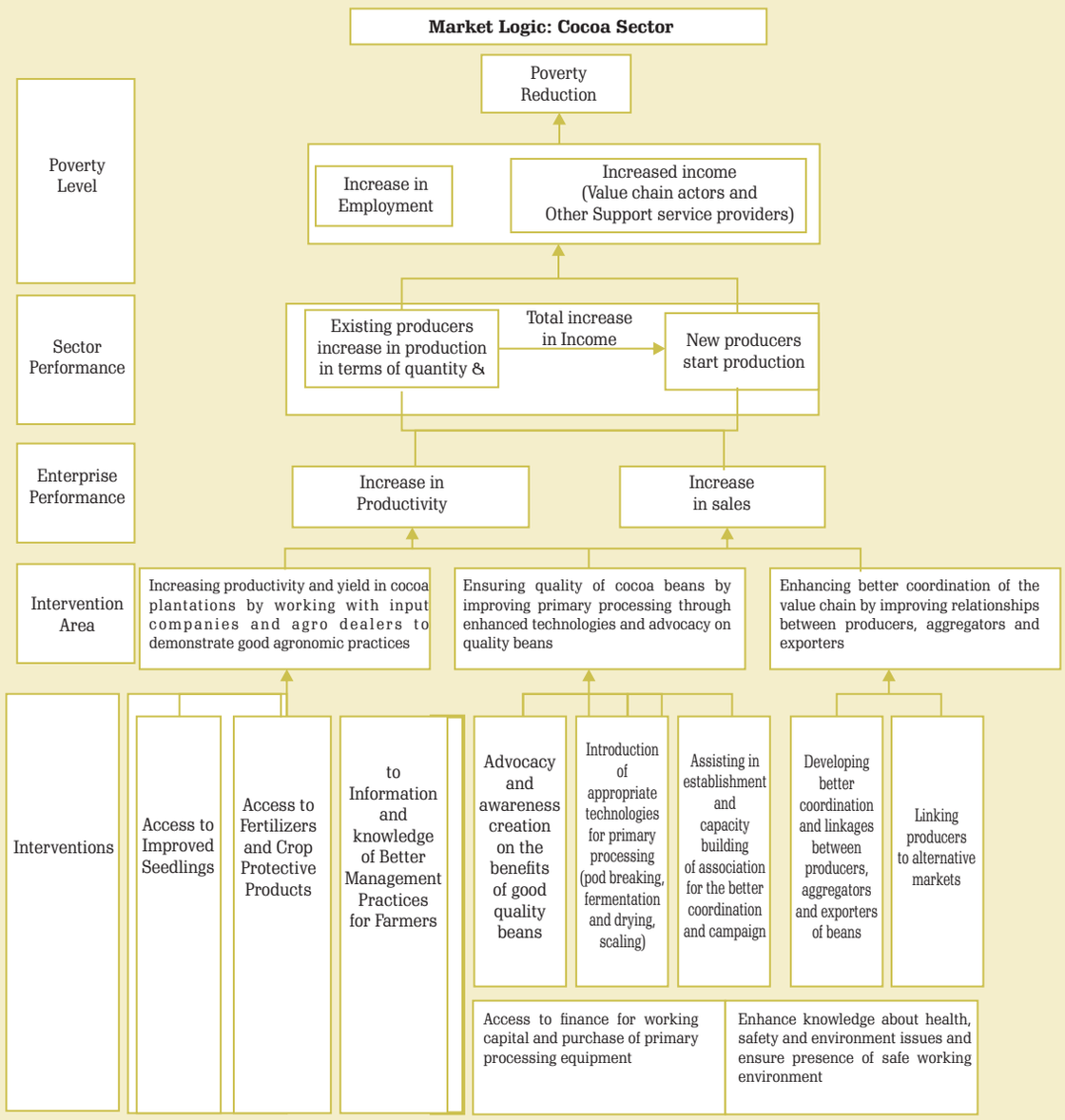
Table 22: Activities Required to Implement Suggested Interventions

Strategic Intervention Area	Suggested Intervention	Activities for Implementation
Enhancing better coordination of the value chain by improving relationships between producers, aggregators (licensed buying agents and factors) and exporters to increase the efficiency of the value chain and the delivery of higher quality product to meet market demands	Developing better, win-win linkages and relationships between exporters, aggregators and producers Awareness creation on the negative effects of poor quality beans, long term commercial gains of good quality beans	• Identification and selection of value chain actors for the meeting including Exporters, LBAs, CAN, BMOs for possible partnerships • Organize meeting between Exporters, LBAs, CAN, BMOs/farmers to develop awareness creation activities • Advocacy campaign to reduce the high cost of doing business in the sector -Development of reward systems for good quality cocoa
Ensuring the quality of cocoa beans through improvements in primary processing and post-harvest activities (pod breaking, fermentation, drying) by introducing enhanced technologies and advocacy on the benefits of good quality beans	Access to technologies for harvesting, pod breaking, fermentation and drying	• Demonstration and promotion of aqua buoy, dryer and digital scaling among LBAs • Linking farmers to financial institutions for provision of working capital and finance for equipment purchase
Increasing productivity and yield in cocoa plantations by working with input companies and agro dealers to demonstrate good agronomic practices	Introduction of new improved seedlings for propagation of new plantations and expansion of existing ones Access to fertilizers and CPP by linking farmers to input companies and agro dealers Demonstration of Better Management Practices and development of new farms and plantations	• -Identify and select potential seed supply companies from among CRIN stations in Ondo, Cross Rivers, Abia and Edo • -Identify and select fertilizer companies with special blend and products suitable for cocoa • -Identify and select CPP companies with appropriate products for cocoa plantations • -Establish distribution network with CRIN through effective linkage with seed suppliers • -Organize meeting to link seed suppliers to famers • -Organize meeting to link fertilizer and chemical companies with agro dealers and famers • -Organize demonstration of BMP in conjunction with LBAs, factors and farmers

Table 23: Partner Selection / Offer

Actors	Selection Criteria	Offer / Responsibility
Licensed Buying Agents	• Strong link and relationship with local and international exporters • Strong financial capacity and knowledge of the sector • Good relationship and access to cocoa producing clusters and farmers • Established network of factors and BMOs • Ownership of drying machines and equipment for testing moisture content • Ability to reward farmers participating in sustainability programs • Willingness to partner with BMOs and farmers on Good Agronomic Practices • Accessibility to identified clusters and proximity for effective transactions • Interest in MSD	• Development of reward system for farmers supplying good quality beans • Linkage to dealers of drying equipment, moisture testing technologies and digital scales • Development of appropriate pricing for cocoa beans • Linkage to organized farmer associations new entrants in cocoa production • Organization of millers into registered association with bank accounts • Business case for sourcing cocoa beans from local farmers • Cost sharing the demonstration and accessibility of equipment for scaling, drying and testing of moisture content
Cocoa Clusters /BMOs	• Interest in investing in backward integration through investment in cocoa beans quality upgrade • Connection with LBAs with large network of farmers • Willingness to provide trade credit to LBAS and farmers • Strong link with partner company abroad • Interest in MSD	• Information on cocoa farm clusters in the Niger Delta • Cost share the strengthening of LBAs on improved relationship with farmers • Cost share demonstration of BMP for farmers
Cocoa Clusters /BMOs	• Strong association registered with constituted authority or processing registration with statutory body • Existence of effective executive and board of trustees • Access and availability of plantations • Large number of participating farmers and factors • Willingness and readiness to participate in MSD	• Willingness to participate in sustainability programs in conjunction with LBAs • Linkage to PIND network of BDSPs and agro dealers for provision of Best management Practices • Linkage to input companies and provision of BMP demonstrations • Linkage with financial institutions and LBAs • Readiness to engage in aggregation and delivery of quality beans to the buyers • Readiness to sign an MoU with LBAs and factors to facilitate quality beans production

Figure 5: Sector Logic



Source: Value Chain Study, 2018

Within 5 years, the cocoa industry in the Niger Delta will be characterized by improved linkages and communications between smallholder farmers and the processors and exporters, with common mutual incentives.

Annexure 1

Companies / organizations visited during CVC study along key value chain functions

S/N	Key Value Chain Functions	Company / Group Visited	Representative Contact address
1.	End Market/ Exporter	i. Bolawole Enterprises Lagos;	JB Gupta, (08034077567)
		ii. Starlink Global Lagos,	Hassan N.O (07082211152) omolajahassan@yahoo.com,
		iii. Gbemitan Investment Akure;	Mr M.O. Abolarinwa (08025017674)
		iv. Agro-Traders Akure	MrKunleAyoade, (08032425966) Kunleayoade@agrotraders.net,
		v. Berveek Ltd, Agip road, Benin-city.	-Chairman (doubled as Edo CAN chairman)- 08033856089, MD (08037028567)
		vi. OLAM/Coop Cocoa Products Ltd, Akure	Engr. Omojola (08065135119)
2.	Final processing	vii. Nestle, Lagos;	**FasugbaAyomide** Ayomide.Fasugba@ng.nestle.com AkinosoOluwaseun Oluwaseun.Akinoso@ng.nestle.com
		viii. Cadbury Lagos	ToluAdesalu, (08033097754) Tolu.adesalu@cadbury.com , e.tolu.adesalu@mdlz.com,
2.	Intermediate Processing	ix. Tulips Ijebu-Mushin, Ogun State;	Rajendra Menon, (08034021739) rajendram@tulipcocoa.com DrTaiwo (Sustainability) 09069378966
		x. Cocoa Products (Ile-Oluji) Ltd;	Engr. D.A, Akande, (08038608085), remiakande@ileolujicocoa.com,
		xi. FTN Lagos;	Fred Onyebigwa, (08092261076) fonyebigwa@ftncocoa.com.ng,
		xii. Plantation Factory (Agro-Traders) Akure,	MrKunleAyoade, (08032425966) Kunleayoade@agrotraders.net,

3.	Aggregation	xiii.	Alade-Idanre CMU;	Pastor Akindayomi, (08080934750)
		xiv.	Irewole Multipurpose Society Ltd, Idanre	AjidagbaFisoye, (08033583136)
		xv.	Abunoko Cocoa Produce, Alade-Idanre;	
		xvi.	Noble kings Commodities Ltd, Abia;	Manager- Hassan Oseni - 08036376944
		xvii.	IROAKAZI Produce Venture, Abia;	IroakaziOgbomnaya – 08037445043
		xviii.	Ejiks Ventures Nig. Ltd, Abia;	Augustine EjikeNnaji- 08088662377
		xix.	Eki Best @ Akwa Ibom;	Ekikere David Bassey (08157099920)
		xx.	Adaoshi Ventures Ltd, Ikom	AKWAKI RAYMOND OKO 07067472827
		xxi.	Toaj Ltd Ikom, Cross River and	Sunday Taiwo, (08033704706) toajnigerialimited@gmail.com, sundaytaiwo94@yahoo.com
		xxii.	Owo Cooperative Multipurpose Union;	Chief Oshodi Emmanuel Oke 08079172741
4.	Production &Primary processing	xxiii.	Tonikoko Cooperative Multipurpose Union, Bamikemo;	OloriRonkeAkindoju (08051310936)
		xxiv.	Owo Cooperative Multipurpose Union;	Chief Oshodi Emmanuel Oke 08079172741
		xxv.	AladeIdanre CPMU Ltd.	Pastor Akindayomi, (08080934750)
		xxvi.	Irewole CMU Ltd, Odo-Ode Idanre	AjidagbaFisoye, (08033583136)
		xxvii.	EdieniItak Multipurpose Coop Society Akwa	Elder Isaac Adolph Akpan – 08036720808
		xxviii.	FBS Farmers, Bende Cooperative Society Abia, Bende LGA;	LGA President – JK Kalu

		xxix.	Itunta High quality cocoa Multipurpose corp. society, Abia state;	Secretary: Moses Onwugbufo
		xxx.	Abayom farmers MCU Ltd, Nkarasi @ Ikom	MrEso Christian, 07031149710
		xxxi.	Agbokim Cocoa Farmers, Agbokim Plantation near Waterfall. Agbokim, C/River and	AKWAKI RAYMOND OKO 07067472827
		xxxii.	Owan Farmers MCS Edo state	AFADAMA DOUGLAS OLU
5.	Input supply	xxxiii.	CRIN, Idi-Ishin Ibadan (Eight Hybrid Varieties);	Dr. A.R. Adedeji (07064715028) aradeji@yahoo.co.uk
6.	Supporting Services	xxxiv.	Financial: Diamond Bank Headquarters, Lagos;	Nwakaego Adu, (09037798690) nadu@diamondbank.com,
		xxxv.	FBN, Headquarters, Lagos.	Muhammad Kagu (07038181448) muhammadkagu@firstbanknigeria.com,
7.	Business Environment	xxxvi.	Ministry of Agriculture-ADP, TCU & Cocoa Revolution in Akure Ondo State;	Orimoloye I.I. (PS) 08033838236; Director of Produce Dept-08034278871
		xxxvii.	Abia State ADP & Cocoa Desk Officer;	Mr Elem Okoli (08037201019)
		xxxviii.	Cross Rivers, Director of Agric Services and Director of TCU;	Mr. Otei Godwin, Director, TCU, MoA, Calabar 08063530003
		xxxix.	Akwa Ibom, Director of TCU	MrEtimma – Cocoa Desk Officer - 07081239324
8.	Business Membership Organization	xl.	Cocoa Association of Nigeria (CAN) Akure,	Adewumi M. Olusegun (08033525670) cocoanig@hotmail.com,
		xli.	Cocoa Farmers Association of Nigeria (CFAN) Akure	AdeolaAdegoke, (08034713426, 07051719495) gokeadeola44@yahoo.com
		xlii.	Cocoa Processors Association of Nigeria, Ikeja	Felix Oladunjoye (08035762349), copannigeria@yahoo.co.uk
		xliii.	CropLife Nigeria (Association of Crop Protection Companies), Akure	SijiOfoesuwa (08093096149)oluwasijiofoesuwa@yahoo.com

The relevant State Agencies and contacts are contained in Table 5:

STATE	Contact Agency	Contact Official	Phone number
Ondo	Cocoa Revolution Program Tree Crops Unit (Program Manager ADP (Program Manager) Produce Department (Director)	Mr. T.D. Adenowuro Mrs. Omogunwa M.O. Mr. Adeniyan O.B. Mr. Adeyemi	08062267696 07069143915 08063550230 08034278871
C/River	Agric Services (Director) Tree Crops Unit (Director) Produce Department (Director)	Mr. Ufono Mr. Otei Godwin	08023569866 08063530003
Edo	Produce Department Tree Crops Unit (General Manager ADP (Program Manager)	Mr. Ogieviaikhin Philip Mr. Erhabor Amos Mr. Aikhuomobhogbe P.I.	08056751083
Abia	Cocoa Desk Officer ADP Rural Institutional Development	Mr. Elem Okore Chukwuekezie Godwin C	08135992294
A/Ibom	Tree Crops Unit (Cocoa Desk Officer)	Mr Etimma ––	07081239324

Annexure 2

Development Partners

Many development partners have had projects supporting cocoa production in the Niger Delta, bringing technical expertise and funding to leverage internal resources in support of the cocoa value chain in the Niger Delta. These have included: USAID /Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) II project; German International Cooperation (GIZ) Sustainable Smallholder Agri-Business Cocoa-Food Link Program; IITA Sustainable Tree Crops Project (IITA-STCP); FMARD/WCF/CLP Cocoa Expansion Program; and IFAD-FGN-NDDC funded Community Based Natural Resource Management Program in the Niger Delta (CBNRMP). Below are a summary of the activities of these projects in the Niger Delta cocoa sector:

USAID/MARKETS II Project

MARKETS II was USAID/Nigeria's flagship project under Feed the Future (FTF) between 2013 and 2017. It used proven private sector demand-driven market interventions, focused on constraints in the agricultural value chain, and promoted smallholder farmers access to ready markets, better inputs (improved seeds and optimal use of fertilizer), adequate finance, better water and pesticide management, appropriate technology, and extension services, resulting in increased yield and income.

The project mobilized/networked a total of 38,000 small holder cocoa farmers in Ondo (22,000), Cross River (12,000), Edo (2,000) and Abia (2,000) states into her cocoa value chain development program. To address the issue of low yield and low quality in cocoa, the project partnered with the public (CRIN, State ADPs) and private (cocoa trading companies and service providers) sector organizations to promote small-holder farmers' access to high yielding and improved varieties of cocoa for planting new farms and rehabilitating existing farms. Using the Training of Trainers (TOT)-Step down approach, the farmers were trained in best agricultural and post-harvest practices (including use of fermentation trays and raised drying platforms) and exposed to 'farming as business' training using the Nigerian Agricultural Enterprise Curriculum (NAEC). In addition, bee-keeping and pollination training were offered to improve cocoa yields via increased pod-bearing flowers and to provide additional income through honey sales and pollination services.

As a result, MARKETS II claims that yields increased from 0.40ton/ha to 0.59ton/ha. Somehow this 50% increase in production does not flow through to the production figures due to the fact that the benefiting farmers are less than 10% of total producers. Also, 760 cocoa farmer groups were strengthened. A key feature of the program was the alignment of the project's cocoa training manual with that of the certifying bodies (Certification Capacity Enhancement Sustainable Cocoa Trainers' Manual, which allowed trained farmers under the program to be presented for certification by the trading companies. Over 300 cocoa farmers' groups (consisting of 14,996 cocoa farmers) have been certified and are now producing certified cocoa which attracts premiums.

Some of the challenges highlighted by MARKETSII in the course of the interventions were: inadequate pods of the newly released cocoa varieties, inadequate extension agents, low levels of mechanization in cocoa, high cost of finance, absence of a private sector driven central coordinating body in cocoa, and low levels of processing facilities and consumption of cocoa products locally.

GIZ Sustainable Smallholder Agri-Business Cocoa-Food Link Programme

The goal of the 5 year, multi-country project (2014-2019) is to help male and female small-holders, mainly in the cocoa producing areas of Nigeria (Abia, Cross River, Edo, Ekiti, Ondo and Osun), Cameroon, Côte d'Ivoire, Ghana and Togo to improve their incomes and food supplies sustainably from diversified production. The strategy builds on achievements of Sustainable Cocoa Business project (08/2009-04/2014). The project counts on partnerships with over 50 public and civil society organizations and companies across the region, and support public and private extension services to organize business skills training for smallholders following the Farmer Business School (FBS) approach. With the project's assistance, Agro-dealers and microfinance institutions establish Business Service Centres (BSC) providing inputs, technical advice, market information and agricultural loans based on formal bank savings. With partners, the project implements cost-effective extension on Good Agricultural Practice (GAP) including ICT-media to intensify cocoa and food production. In the Cooperative Business School, leaders of producer organizations learn how to improve their services to members.

Achievements in Nigeria, especially for cocoa include development of extension material on good agricultural practices for cocoa and selected food crops and over 27,000 smallholders (35% women) received training on GAP for cocoa and food production (maize, snails, or cassava).

FMARD/WCF/Cocoa Livelihoods Programme in Nigeria

The program which was implemented between 2010 and 2014, was a public-private-partnership initiative involving the World Cocoa Foundation (WCF) and her technical partners - GIZ and SOCODEVI, with financial contribution by Bill and Melinda Gates Foundation. It aimed at increasing farmers' income by improving their production and marketing efficiency through business skills acquisition and supporting the diversification of the rural economy. The strategic pillars of the project are Farmers' Business School (FBS) and Farmer Organization Strengthening.

Some results of the project are: 270 Farmers' Field Schools/Farmer Learning Groups (FFS/FLG) has been established across 7 cocoa producing States in Nigeria; 10,800 cocoa farmers are trained in Good Agricultural Practices, Planting, Replanting and Diversification Techniques and Integrated Crop Pest Management; and 270 communities/groups are supported/assisted to establish community-based nurseries. Some Challenges encountered are: difficult terrains (Poor farm roads), farmers attitudes/expectations (always agitating for loans and farm inputs), and difficulties in accessing hybrid pods by farmers.

IITA Sustainable Tree Crops Program (IITA-STCP)

The pilot phase of the IITA-STCP took place in Ondo State between 2003 and 2005. The main thrust of the program was to use the Farmers Field School model to train cocoa farmers in six LGAs of the state. The program trained small-holder cocoa farmers in integrated crop pest management (ICPM) through the TOT model. Capacity building for farmers' organization was introduced into the program along the line. At the end of the pilot phase, as a result of the impact and achievement recorded during the pilot phase, the FMARD through the National Cocoa Development Committee (NCDC) engaged IITA in 2006 to build the capacity of all the 14 cocoa producing states in Nigeria, to be able to use the FFS as an extension approach to train cocoa farmers. Some of the states, namely, Ondo, CRS, Edo, Abia, Ekiti, Osun, Ogun, Akwa Ibom, Kogi, and Kwara were able to establish FFS for various number of years ranging from 1-4. STCP provided backstopping in the various states. The project ended in 2010.

IFAD-FGN-NDDC funded Community Based Natural Resource Management Program in the Niger Delta

The program implemented cocoa program in Ondo, Abia and Cross River States. It supported farmers to establish nurseries and raise cocoa seedlings to replace old trees and establish new farms. In addition, the project collaborated with the Ondo State Government in establishing a cocoa confectionery and chocolate factory at Alade Idanre in 2016 but yet to be commissioned as at the time of this study.

Nestle's initiatives

Nestle and Cargill, two of the world's largest food companies that sell a lot of chocolate products, are investing millions of dollars to train African cocoa farmers and providing disease-resistant and high-yielding varieties for farmers.

Nestles Cocoa Plan is an initiative that will invest over $120 million in cocoa development over the next ten years. Cargill calls its program the Cocoa Promise. The program has trained over 90,000 farmers in Cote D'Ivoire to improve their skills in cocoa cultivation.

- To increase the amount of money farmers can make from the cocoa business and encourage sustainable cocoa production, NGOs like Fairtrade, Rainforest Alliance and UTZ have set up certification programs to protect cocoa farmers and increase the profit potential of their produce.

Fairtrade for example has a very interesting program which assures that farmers are never paid below $2,000 per ton to protect them from the often wild swings in cocoa prices (www.smallstarter.com)

Annexure 3

Climate and Soil Conditions for Cocoa Production

Climate Conditions Suitable to Cocoa Cultivation

The natural habitat of the cocoa tree is in the lower story of the evergreen rainforest and climatic factors, particularly temperature and rainfall, are important in encouraging optimum growth. Temperature: Cocoa plants respond well to relatively high temperatures with a maximum annual average of 30-32 degrees C and a minimum average of 18-21 degrees C.

Rainfall: Variations in the yield of cocoa trees from year to year are affected more by rainfall than by any other climatic factor. Trees are very sensitive to a soil water deficiency. Rainfall should be plentiful and well distributed through the year. An annual rainfall level of between 1,500mm and 2,000mm is generally preferred. Dry spells where rainfall is less than 100mm per month should not exceed three months.

Humidity: A hot and humid atmosphere is essential for the optimum development of cocoa trees. In cocoa producing countries relative humidity is generally high, often as much as 100% during the day, falling to 70-80% during the night.

Light and shade: The cocoa tree will make optimum use of any light available and has been traditionally grown under shade. It's natural environment is the Amazonian forest which provides natural shade trees.

Shading is indispensable in a cocoa tree's early years. It is recommended that twenty (20) scattered natural forestry trees should left per ha of cocoa farm in addition to established plantain pseudostems to provide shade for transplanted cocoa seedlings in the early year of establishment.

2.4 Soil Conditions

Cocoa is grown in a wide variety of soil types:

Physical properties - Cocoa needs a soil containing coarse particles to leave free space for roots and with a reasonable quantity of nutrients to a depth of 1.5m to allow the development of a good root system. Below that level it is desirable not to have impermeable material so that excess water can drain away. Cocoa will withstand waterlogging for short periods but excess water should not linger. The cocoa tree is sensitive to a lack of water so the soil must have both water retention properties and good drainage.

Chemical properties - The chemical properties of the topsoil are most important as there are a large number of roots here for absorbing nutrients. Cocoa can grow in soils with a pH in the range of 5.0-7.5. It can therefore cope with both acid and alkaline soil, but excessive acidity (pH 4.0 and below) or alkalinity (pH 8.0 and above) must be avoided. Cocoa is tolerant of acid soils provided the nutrient content is high enough. The soil should also have a high content of organic matter, 3.5% in the top 15 centimeters of soil. Soils for cocoa must have certain anionic and cationic balances.

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