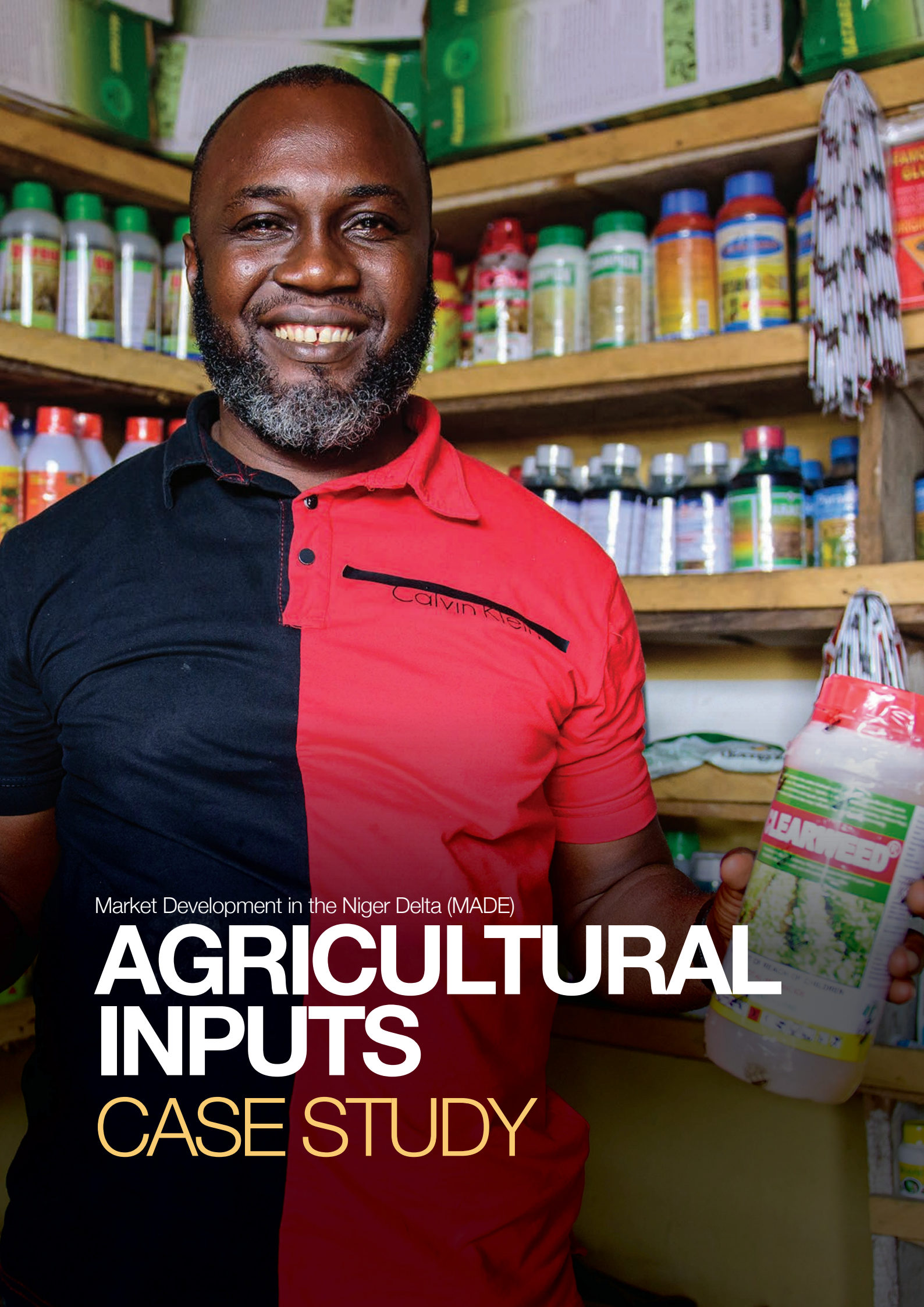


Market Development in the Niger Delta (MADE)

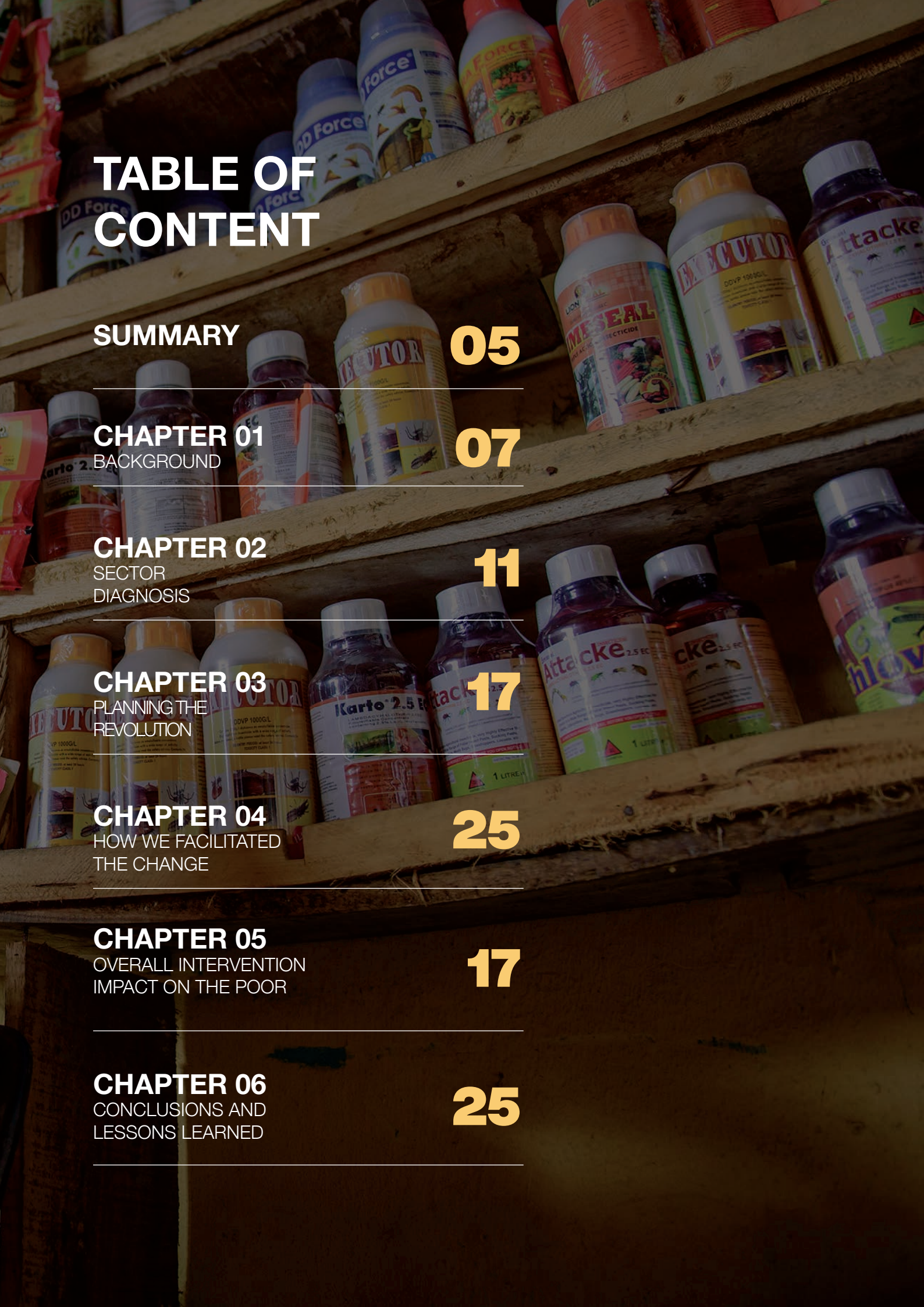
AGRICULTURAL INPUTS CASE STUDY

ABOUT MADE

Market Development in the Niger Delta (MADE) programme is advancing rural agricultural markets and other sectors that impact on poor people, to reduce poverty and conflict in the Niger Delta region. Funded by the UK Department for International Development (DFID) and implemented by Development Alternatives Incorporated (DAI), the programme is facilitating increase in income for poor smallholder farmers and entrepreneurs in target sectors of cassava, fisheries, agricultural inputs, oil palm and poultry. The first phase of programming (September 2013 – February 2018) made significant progress and was able to surpass its target in achieving a 15% income increase for 150,000 people in the Niger Delta area.

Building on the success of MADE I, DFID approved a costed extension for an additional two years (March 2018 – February 2020) and has another target of 155,000 smallholder farmers and entrepreneurs with increased incomes. The expectation is that 30,000 of those with increased incomes will be poor low-skilled youths and women from Edo State, who are susceptible to human trafficking.

The sectors that the MADE programme intervened include Agricultural Inputs, Cassava, Fisheries, Leather, Palm Oil and Poultry in 9 Niger States - Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. The programme also worked in the cross-cutting area of access to finance and gender. This case looks at the work of MADE programme in Micro and small-scale Poultry sector and intended for the practitioners and enthusiasts in the development sector of Nigeria and around the world.



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SUMMARY

Genesis Analytics was commissioned by DAI to develop case studies for the Market Development in the Niger Delta (MADE) programme's access to finance, agricultural inputs and gender interventions. The objective of the case studies was to chronicle the intervention story in detail – how the programme explored the entry points, failed pilots, non-attractive value propositions, showcased proposed new business models and approaches that had been embraced by partners, how the programme had evolved to mainstream women, overcome security challenges by working with co-facilitators, strengthened the intervention logic and results measurement and overall programme adaptation approach. The case studies were developed using information gathered from discussions with the Intervention Managers and various programme documents and literature.

Smallholder farmers in Nigeria's Niger Delta region's agricultural activities are generally characterised by low yields for most of their crops due to limited access to quality agricultural inputs. Years of inappropriately targeted government input subsidy programmes have undermined the development of functional private sector input supply chains for smallholder farmers. An under-resourced state extension system and poor awareness of good agricultural practices (GAP) among farmers further compounds this situation, resulting in a low-input, low-output agricultural system that has contributed to persistent food insecurity and poverty.

This case study documents the Agricultural Inputs Intervention which was implemented by the MADE programme with the objective to address the challenges of low agricultural productivity among smallholder farmers in the Niger Delta due to limited access to quality agricultural inputs. The MADE programme sought to address these constraints through a knowledge driven agro-input retail strategy. The strategy focused on supporting reputable agro inputs companies and agro-dealers to improve their distribution networks and embed knowledge on GAP through partnerships with local 'knowledge retailers'. These local agro dealer networks and lead farmers train smallholder farmers through practical demonstrations and on-going field support.

Results from this case study show that MADE's partnership with agro inputs companies strengthened distribution channels, developing networks of local input retailers and agro dealers, bringing convenience and reducing transaction costs for farmers. Coupled with improving knowledge of GAP and changing perceptions on the efficacy of agro inputs among farmers, improved access to quality inputs is driving higher yields and incomes for farmers in a number of value chains such as cocoa, cassava and rice. Agro input companies and local agro dealers are also benefiting from higher sales volumes and improved competitiveness over 'cheap' but often counterfeit alternative products on the local market.

The agricultural input intervention's knowledge driven approach shows that farmers need both incentives and capacity to adopt good practices that improve yields and incomes. It is also clear that private sector actors who invest in supporting smallholder farmers stand to benefit by unlocking the productive and income potential of seemingly poor regions, resulting in sustainable business opportunities.

CHAPTER ONE

BACKGROUND

The slow growth of agriculture in Nigeria has been due to low investments and uncompetitive environment for agri-businesses, poor access to markets and inputs

Importance of the Sector to the Poor

Agriculture is an important sector in the Niger Delta, employing approximately 52% of the Niger Delta's total labour force and providing a livelihood for about 90% of the rural population[1]. It accounts for 24% of the Niger Delta's contribution to the national GDP and employs about 11.1 million people[2] out of the population of more than 40 million. The crop subsector dominates the sector in the region with farmers producing food and economic crops such as cassava, maize, rice, cocoa, oil palm, fruits and vegetables, etc. Eighty percent of farmers in the region are small-scale farmers with land size holding of 0.5-4 ha. The crop subsector is important as it provides food and agro-commodities for the populace, industries and exports within and outside Nigeria. Nonetheless, the region, as with the rest of Nigeria, is not self-sufficient in food production. Nigeria accounts for annual food import worth $11bn growing at an unsustainable rate of 11 per cent per annum[3] and food imports are five times those of exports[4]. The slow growth of agriculture in Nigeria has been due to low investments and uncompetitive environment for agri-businesses, poor access to markets and inputs, limited knowledge and use of modern inputs, amongst other challenges.

1 http://www.ruralpovertyportal.org/country/home/tags/nigeria
2 PIND: Analyses of the Niger Delta's economic opportunities: submitted by NNF
3 http://punchng.com/nigeria-spends-11bn-yearly-food-importation/
4 http://ijecm.co.uk/wp-content/uploads/2014/09/2923.pdf

The bulk of agricultural produce (beside export crops such as cocoa) ends up in the food market with minimal value addition, as processing and marketing activities are plagued by poor infrastructures, low investments and unfavourable policy somersaults, thus resulting in supply gap and increasing importation of processed food and agro-commodities in Nigeria.

Low crop productivity is widely experienced by small-scale farmers and increased production has only been due to expansion of area under cultivation rather than yield intensification. Smallholder farmers lose between average of 30% of their potential crop yield annually to pests and diseases in the Niger Delta region. The low crop productivity results in low income for farmers, meagre earnings for farm labour and high cost of food, consequently predisposing rural households to high incidence of poverty and limiting potential for wider economic growth. Underpinning the high incidence of poverty in households engaged in agriculture is their low input-low output production model, soil fragility, rain-dependence, minimum inputs and poor yields. In the region, farming practices are traditional with limited use of modern farming inputs such as improved seeds, fertilizers and pesticides. Mechanization is on a very low scale as the use of crude implements predominate. Usage of modern and effective agricultural inputs (improved seeds, crop protection products, fertiliser, etc.) can reverse poor crop yields; improve crop quality and agricultural productivity needed to ensure food security, provision of industrial raw materials for the burgeoning population as well as agro-commodities for exports.

Agricultural inputs exist with potential to raise productivity and incomes for large numbers of low-income households engaged in crop production and in the input distribution chain as micro-level retailers. Nonetheless, the limited understanding of the value proposition for use of inputs by smallholder farmers (SHF), limited availability in the Niger Delta, and low understanding of the potential market by the major agri-input companies, have restricted their use. As such, improvement in input usage by smallholders holds enormous potential to raise incomes and reduce poverty in the Niger Delta region. Consequently, MADE selected the agricultural inputs market because of its importance to agricultural productivity, crop yields, and if linked to markets, conversion to income.

Where do we focus and why?

The Niger Delta is Nigeria's major producer of oil palm, cassava, plantain, banana, pineapple, cocoa and other crops. Agricultural input use on these crops is currently very limited. Increase in the use of agricultural inputs, especially of fertiliser and crop protection products, can significantly increase productivity and income of those engaged in the production of those crops. Increased income for farmers is predicated on access to new markets and adequate storage facilities.

The focus is on improving both input distribution channels and the use of improved farming practises by SHF through adoption of Good Agricultural Practices (GAP). Initial emphasis will be on cash crops from which farmers derive an income. These crops include: cocoa, maize, rice, fruit (in particular pineapple), oil palm and vegetables. Farmers are more likely to adopt GAP and spend for inputs on crops from which they derive an economic benefit.

The rationale for working in this sector is fourfold:

a. **Potential to generate increases in income:** There are over four million crop farmers in the Niger Delta and the agriculture sector employs 11.4 million people. There is great scope for raising incomes and reducing poverty by increasing agricultural productivity.

b. **Benefits for women:** 30% of crop farmers are women (i.e. 1.2 million farmers), and women also represent 53% of the 11.4 million people employed in the sector.

c. **Impact in core oil producing states:** 43% of crop farmers in the Niger Delta are located in four of MADE's core states of Bayelsa, Delta, Akwa Ibom and Rivers State that are included in the nine states in which MADE works. The incidence of poverty and violence is highest in these core states.

d. **Feasibility:** Improving access to and use of agricultural inputs is tried and tested, and there are good potential partner companies willing to work with MADE.

Demand and Supply Situation in 2013

Access to the supply and use of major inputs across the Niger Delta is very poor as compared to other regions of Nigeria. Issues on the demand side are farmers operating at a smaller scale of operation compared to other parts of the country; 80% of the farmers in the region are small scale with land size holding of less than 4 Ha. In addition, awareness of the benefits of using inputs is low and SHF have difficulty understanding the value proposition of investing in quality inputs. There are several issues on the supply side including weak distribution channels for the private sector seed companies, crop protection products (CPP) companies and fertiliser companies; given the challenges of the civil strife many of the large companies have not been operating in the Niger Delta and agro-dealers have been underdeveloped. Because of the government's input subsidy scheme, leading input companies had not been focused on trying to sell directly to SHF, leaving that to ineffective public distribution channels. Absence of some crucial supporting services such as extension and finance impacts on the performance of the sector.

Agricultural extension services are largely rendered by relevant government agencies (ADPs, Ministries of Agriculture, etc.) involved in agriculture. Nonetheless, the public extension system is ineffective resulting in widespread adoption of traditional farming practise and low utilisation of modern inputs. The unfavourable terms of credit prohibit many smallholder farmers from accessing formal credit; the main source of finance is their informal savings group thus limiting investments in agriculture.

Points of Leverage

There are several key points of leverage for improving the uptake of agricultural inputs by farmers in the Niger Delta.

Large fertiliser and CPP companies: Intense competition in the industry is making companies seek out new opportunities to increase sales. Specifically, CPP companies are looking to expand into the fertiliser market and fertiliser companies are looking to improve their distribution networks. In Northern Nigeria, some fertiliser companies have already set up improved distribution structures. These same companies have shown a willingness to invest in developing the fertiliser market in the Niger Delta through improved distribution channels and farmer awareness.

Government policy: The Federal Government has shown interest in trying market based approaches to improving agricultural productivity. It has over the last 8 years introduced several reforms to fertiliser subsidy, with a goal of totally withdrawing from subsidy and ensuring private companies continue to produce fertiliser to meet market gaps. However, the government's withdrawal from the major subsidy programme has increased the opportunity (and necessity) for leading agricultural input companies to develop their direct sales channels.

Geographic clusters with high uptake of CPP and Fertiliser: There are areas in the Niger Delta with above average use of CPPs and fertiliser. These areas could provide a better understanding of what drives increased CPP and fertiliser use in the country.

CHAPTER TWO

SECTOR DIAGNOSIS

Increasing competition within the industry has led to thinning profit margins, which has driven more aggressive marketing and catalysed changes in company structures.

Agricultural inputs are broadly categorised as improved seeds, fertilisers, crop protection products (CPPs) and machineries with a combination of some or all inputs required to enhance farm productivity. The CPP market is well structured and organised with good product flow within the market. The CPP market has experienced tremendous growth within the last 15 years, with increasing demand from SHF because the value proposition is very easy for the farmers to see. The government (both Federal and State) play marginal roles in the sale and distribution of CPPs in Nigeria. The role of government is restricted to regulation of the active ingredients in the CPPs imported into Nigeria. All CPPs sold in Nigeria are imported, primarily from China (80 – 90%); and the remaining quantity from Germany and United States.

Increasing competition within the industry has led to thinning profit margins, which has driven more aggressive marketing and catalysed changes in company structures. In particular, intense competition has resulted in the integration of the functions played by suppliers, distributors, and retailers. This has forced an improvement in the supplier-distributor-retailer relationship leading to greater integration and cooperation in order to meet the needs of the consumers. As a result, in comparison to fertiliser companies, CPP companies have better developed supply chains in many parts of the country that serve farmers, including those in rural areas.

introduced the Presidential Fertiliser Initiative (PFI). The PFI seeks to drive and optimise local production of fertiliser in Nigeria by reviving well-below-capacity local blending industry. The objective of the initiative is to discourage importation of blended fertilizer, by directly negotiating discounted contracts to procure the constituent raw materials used in the production of NPK fertilizer. OCP and European suppliers will supply Di-ammonium phosphate (DAP) and Muriate of potash (MOP) respectively under a negotiated arrangement. Urea will be supplied locally by Indorama Eleme Fertilizer & Chemicals Company and Notore Chemical Industries both in Port Harcourt, Rivers State, Nigeria while the Granulated Limestone will be supplied also locally by the West Africa Fertilizer Company (WAFERT), Okpella, Edo State, Nigeria.

The Nigeria Sovereign Investment Authority (NSIA) established a Special Purpose Vehicle, known as NAIC-NPK Limited to manage the fertiliser fund on behalf of FEPSAN. The arrangement is leading to investments to improve existing blending plants and resuscitate non- functional plants. Eleven blending plants are now in full operation in different locations across the country and about 900,000 MT of NPK fertiliser was blended in 2017.

Market Actors

The value chain comprises a series of actors – manufacturers through the distributors to the end user (the farmers). Each of these actors carries out specific functions in the value chain and engages with other actors in supply and demand relationships. They may operate in different channels, as they supply different end markets, using different technologies or different business strategies that will distinguish them one from the other.

Producers / Suppliers

The crop protection industry in Nigeria is dominated by four players (Saro Agrosciences, Harvestfield Company, Springfield Agro and Jubaili Agrotech) with combined market share of 75%. In addition to these four dominant players, there are about 32 other players that have regional and / or product specific focus with limited capacity. Currently, there are two CPP manufacturing plants in Nigeria (CANDEL and Harvestfield). Most firms import products which are distributed via wholesalers and agro-input retailers who operate in stores, open-markets, and often at the farm-gate.

Some of the big CPP suppliers have forward integrated, because of intense competition, to curb the influence and power of the distributors, and to capture more market share. While the competition is good for the farmers, giving them direct access to the CPP companies and a 12% reduction in the price of herbicides, it has led to reduced profit margins for the CPP companies.

There are two manufacturers of urea and blending plants where the raw materials for fertiliser are blended. Notore Chemical and Indorama Group are the only primary producers of Urea in Nigeria, both located at Onne, Rivers state in the Niger Delta region. Indorama is operating at full capacity with local consumption accounting for 30% of its production while 70% is exported to other countries like South Africa, Brazil and Argentina. Dangote Group is set to commence production at its $2 billion fertilizer plant located in Lekki industrial area of Lagos.

There are 12 blending plants in operation with majority concentrated in the North and about four in the west and south eastern part of Nigeria. There are about seven large blending companies (Notore Chemicals, TAK Agro, Kaffo Mines, Golden Fertiliser, Single Superphosphate Fertiliser Company of Nigeria, Indorama and Edo Fertiliser and Chemical Plant) that both produce and import fertiliser. There are 4-5 facilities that crush rock phosphate, agricultural lime, granulated limestone and kaolin for blending.

Distributors

CPP distributors are mostly located in urban centres but have shops in rural areas. The dominant sales channel is the village-level retailers. An average distributor's turnover is about NGN200 million per annum. There are about 11 major distributors of CPPs in Niger Delta. The major distributors sell only CPPs. The CPP companies that have forward integrated have retail outlets (sales hubs) in areas where CPP use is high. These outlets are located in agrarian towns and can sell directly to farmers mainly through a network of retailers. Distributors rarely sell only fertiliser because of its low margin nature. Rather, fertiliser is sold as part of a wider suite of products because it can leverage other assets, such as warehouses owned by the distributors, during the times of specific fertilizer demand.

Retailers

Urban and village-level retailers are independent businesses with trade ties to distributors. The majority of retailers are very small businesses with nearly half characterised as table top dealers with no business bank account. Most of the retailers have no access to external finance, except for friends and family, however, they often enjoy trade credits from the distributors. Retailers are a major source of information to farmers, they influence farmers adopting and buying behaviour. There are approximately 1,200 agricultural input retailers across the Niger Delta. The profitability of an average CPP retailer is presented in table 3.

Spray Service Providers (SSP)

Sprayers are service providers within farming communities that spray CPPs on farms for a fee. Their charges start from NGN500–550 per litre of CPP sprayed. They are usually young men aged 18–40 years. They sometimes retail CPP and are involved in other off-farm activities during the off-peak agricultural season. They are the farmer's "pest control" advisers and thus influence farmers CPP buying behaviours and pest control activities.

Supporting Services and Interconnected Industries

Agricultural Development Programmes

State-funded Agricultural Development Programmes (ADPs) have established public extension services to educate farmers on farming techniques. Currently the village extension agent (VEA) is the main source of information for farmers about the proper application and usage of agricultural input. Although the state ADPs pay rural extension agents to provide farmers training, the efficacy of this public service is terribly low. For example, in Bayelsa state, given the number of extension agents on payroll, the estimated ratio of extension agents to farmers is approximately 1:46,196. In contrast, the actual number met by an average extension agent is 260. With such poor extension worker coverage, farmers do not know where to turn to in order to improve their farming knowledge.

Agricultural Finance

Both public and private financial investment in Nigeria's agricultural sector has been limited. For example, between 2006 and 2008, agriculture was only 2.27% of total bank credit . While from 2002–2007, the Federal Government's investment in agriculture remained constant at around 4.3% with state government's average investment around 3.4%.

This national level dynamic is mirrored in the Niger Delta. Although Niger Delta specific figures are difficult to verify, it is estimated that only 10% of Niger Delta farmers have access to finance, and little of that is for agricultural production. Reasons for low funding include the lack of understanding of the agricultural sector, perceived high risks, complex credit assessment processes and high transaction costs.

Regulatory and Institutional Supporting Environment

The Federal Ministry of Agriculture and Rural Development (FMARD) has the overall responsibility for formulating and implementing the national policy on agricultural inputs in Nigeria. The Standards Organization of Nigeria (SON) and National Agency for Food and Drug Administration and Control (NAFDAC) are agencies that check the quality of fertiliser and CPP supplied to farmers.

Constraints Analysis

Farmers production and productivity are low because their farming practices are rudimentary, often inherited practices that are obsolete, and do not have access to good quality agricultural inputs. Specific identified constraints are:

Demand Side Constraints

Poor access to agricultural extension service providers and improved farming practices, pest and disease identification and treatment. Agricultural extension in the Niger Delta is a free service by state governments. This free service has crowded out private extension agents, as farmers expect the service for free. However, government extension service is overstretched as the numbers of extension agents available are too low to have effective coverage. Therefore, many small holder farmers have limited access to extension services and no understanding of the value proposition related to use of improved inputs and GAP.

Inappropriate farm usage of agricultural inputs: Many farmers lack knowledge on correct dosages and application techniques, poor safe and responsible use, and handling knowledge. Farmers, where they use agricultural inputs, often over-use them causing wastages and causing environmental damages in the process. This adds to both the cost of inputs (from using more than required), while also reducing the market value of the products by increasing their minimum pesticide residue levels.

Supply Side Constraints

Multiple supply side constraints exist as well:

a. **Poor understanding of small-holder farmers' needs by the input companies:** There is the misconception that small holder farmers can not afford to buy agricultural inputs. Although many farmers are indeed too poor to buy the packed sized products at market rates, many farmers can afford, and are willing to purchase, smaller volumes of inputs.

b. **Input companies limited understanding of market opportunities in the Niger Delta:** Input companies have avoided the Niger Delta because of the conflict and the more difficult market conditions when compared to other parts of the country. They are not rapidly expanding into the Niger Delta because they are not well informed on crop farming areas and practices in the Niger Delta and do not have the distribution channels to leverage.

c. **Weak marketing strategies:** agricultural input companies do not perform the market research required to better understand what farmers need to buy and weak relations with retailers and distributors means that they do not feed market information back up the value chain to the input companies. As a result, input companies are not very aware of small-holder farmers purchasing pab tterns.

d. **Weak retail market locations:** given the government's input distribution programmes and the lack of interest in promoting private sales of inputs in the Niger Delta, the retail outlet networks have been quite weak. Retail outlets for agricultural inputs are located far away from rural farming communities in urban centres, thereby increasing the transaction costs for farmers.

Given these constraints, MADE worked with lead agricultural input firms to co-create innovative market-led solutions that embeds Good Agricultural Practices into the selling process through organisation of demo plots and various marketing events. The model would increase the linkages and integration with local retailers, turning them into “knowledge retailers”, who could reach more directly to the farmers. The support is to get input companies to understand and appreciate the constraints and design suitable and appropriate solutions to address them in a profitable and sustainable way.

CHAPTER THREE

PLANNING THE REVOLUTION

Through strengthened distribution channels, farmers will start consuming more inputs, increasing their profitability and subsequent demand for more inputs delivered directly to them by profitable agro retailers who are close to the farms.

MADE designed its intervention to engage closely with lead large fertiliser and CPP companies to incentivise them to develop stronger distribution systems with linkages closer to the farmers. If the large agricultural input companies could improve their knowledge of their end clients, they would understand purchasing behaviour and develop channels to sell their products directly to the small farmers, using tools such as appropriate packaging and good technical advice to demonstrate the value proposition of purchasing more inputs. Through strengthened distribution channels, farmers will start consuming more inputs, increasing their profitability and subsequent demand for more inputs delivered directly to them by profitable agro retailers who are close to the farms. The net result will be increased productivity, enhanced competitiveness and increased incomes. As the systems start to work for one or two of the companies, additional firms will crowd into the market to adopt similar procedures, to improve their distribution and to increase their revenue.

MADE's Vision and Strategy

MADE's vision for the Agricultural Inputs Market was a market driven relationship between agricultural input companies working through strong retail outlets to engage crop farmers providing them with knowledge of and access to and use of appropriate farm inputs and improved farming technology to increase productivity. MADE's strategy was to strengthen the capacities of agricultural input companies to embed private extension services into the selling process through the demonstration plots and other marketing events, and expanded distribution to ensure availability in local farming clusters.

MADE's Intervention

Intervention objectives:

- *To increase smallholder farmers' uptake of good quality agricultural inputs by embedding farmer education into agro-retailing.*
- *To establish a reliable distribution channel through which agricultural inputs of reliable quality are sold in an affordable manner directly to farmers.*

In order to address some of the above constraints, MADE worked with input companies to pilot a knowledge driven agro-input retail model, where farmer education is embedded into agro-input retailing.

The knowledge driven agro-input retail model is as follows. Large agro-input companies select some of their existing distributors to participate in the intervention. These selected distributors act as the anchor points for the intervention. They select and monitor participating retailers and are the supply point to the retailers. The participating retailers were trained and supported to sell agricultural inputs to smallholder farmers and to teach these farmers good agricultural practices. The teaching component of the intervention is critical because it will enable smallholder farmers to optimise the benefits of purchased agro-inputs. Having optimised the benefits of agro-inputs as a result of proper instructions regarding use, farmers are more likely to repeatedly purchase from retailers because of the dual value: inputs and information.

Intervention Practice

a. **Product:** The intervention's primary focus is to extend the sales and distribution channels for agricultural inputs to smallholder farmers. The programme focused on crops that are of economic importance – such as cash crops (cocoa, oil palm, maize), women dominated (vegetables) and household nutrition (Biofortified pro-vitamin A cassava).

b. **Channel Development:** The agro input companies through their distributors chose agrarian locations and transit markets where the promotion and demonstration effect would be of significant benefit to both the trade (agrodealers) and farmers. The distributors recruited developed new agrodealers in areas where there were none.

c. **Incentives:** Initially, the agro-dealers were incentivized by the lead firms to organize demonstration plots. Farmers' attendance, demo plot location, orientation, size, yield etc are some of the parameters that the input companies considered before incentivizing the agro-dealers.

d. **Demand Creation:** The agricultural input companies created demand by organizing market storms, demo plots, town hall meetings and IEC materials to show the benefits of farmers adopting better practices and investing in agricultural input.

e. **Spray Service provision (SSP):** The agricultural input companies understood the need to develop a channel that will restrict untrained farmers from handling pesticides. A SSP is a service provider who has received special training to apply pesticides and hires out his services to fellow farmers to spray their farms. SSPs sell spraying services and apply other

suitable agronomic solutions to control farming pest and disease problems. There are many benefits for farmers hiring SSPs. A primary one is that the correct pesticides are used at the right time to target the correct pests, which ensures that the pesticides are handled and used more efficiently and effectively at the right levels of concentration. There is also a controlled line of distribution that prevents unsafe handling and enables the introduction of container management systems. Using SSPs also reduces the risk of human exposure to pesticides, protecting women and children.

Pilot

MADE's entry point was to work with agro-input companies that sell all three of the inputs the programme was focused on i.e. fertilizer, seeds and crop protection products. The thrust of the pilot was to support the companies to improve their knowledge of smallholder farmer's needs and sell products directly to them, using appropriate packaging and good technical advice to demonstrate the value proposition of purchasing more inputs, starting at small and affordable process and volumes with a view to scaling up incrementally later in line with increasing smallholder incomes and capacities.

The programme initially worked with Saro Agrosciences and Springfield Agro because they were the only companies that sold the three inputs stated above in 2014. Neither had a real presence in the Niger Delta, so they were starting their strategic entry into the region. The first pilot was with Springfield Agro, who was supported to set up channels to engage farmers in Edo and Delta States, in June 2014. This proved challenging because Springfield Agro had problems managing and monitoring the activities of their demo plots and recruiting agro-dealers/retailers. Springfield Agro trained 10 retailers who set up only 15 demo plots which reached a total of 300 smallholder farmers.

MADE learned from the first pilot and modified the design in the pilot with Saro, which started in September 2014. It was to set up demo plot farmers in Edo, and Delta; introduce a Sprayer Service model in Ondo and Cross River; and start breaking bulk of its fertilizer from 50KG to 10KG. Saro trained 45 retailers who successfully established 18 demonstration plots in Agbor, Delta State and Benin, Edo State, which reached 359 farmers. 3,381 farmers were reached through the spray service intervention in Ondo and Cross River States.

Saro Agrosciences learned from the pilot. Its monitoring report which showed that the quality of the work of the SPPs and KRs were not as high as expected, so decided it needed to have more control over the spray service providers and knowledge retailers to ensure quality. The retailers and SSPs were more interested in selling than in undertaking developmental activities. Saro therefore adapted the model by introducing "Dr Saro" system, where a Dr Saro is a trained agronomist dedicated to market development activities such as demo plot administration, sprayer service training and monitoring. The Dr Saro were on an incentive based salary i.e. they get a fixed salary amount and also an incentive based salary based on sales and outreach targets.

In April of 2015, the pilot was reviewed and important lessons were learnt. This included the need for proper supervision not just for the organization but for responsible staff – to check if they have the right skills, knowledge and ability to implement agreements. The need to have more hands on field supervision and more integration of the field activities to the companies' field operations and sales, and make sure demos are for crops that are locally important i.e. one size may not fit all.

To move forward, MADE put out an offer in May of 2015 to a broader range of agricultural input companies to support adoption of new models to get closer to the farmers. After getting proposals back from a range of inputs suppliers, it did not accept

Springfield Agro's offer, and expanded to other partners – Syngenta Nigeria Limited, the CANDEL Company and Contec Global Agro Limited – a bio-safe input company. With four companies driving the interventions, there would be greater learning and experience, as well as some nascent competition between the firms to drive improved performance and innovation.

In 2015, MADE also introduced a new agreement mechanism with its partners – called the "deal note", a 2-3 page agreement highlighting the key elements of the partnership. The Deal Note is a critical part of the co-creation process with the companies, as it clearly states the interests of both the private company and the project to work together, clearly lays out the expected outcomes from the partnership, especially in terms of the improved performance for the private company, established milestones and benchmarks for progress, the geographic areas to focus on, and defined the respective inputs from the two parties. This short, transparent, document allowed for very easy review of the basic "deal" that both sides wanted to achieve and for ensuring that both sides were providing the resources that they had promised.

Scale Up

MADE supported Syngenta Nigeria, Candel, and Contec to develop and establish distribution channels in the Niger Delta by training farmers on Good Agricultural Practices. Syngenta was primarily interested in introducing crop specific products for cocoa, maize and rice. Contec introduced bio-safe pesticides to treat farm pest problems and other common pests and diseases.

a. **Spray Service Provision:** In 2017, MADE supported CropLife Nigeria to further extend the SSP concept in agrarian clusters within the Niger Delta region. Through CropLife, 220 SSPs were trained who are actively selling sprayer service to smallholder farmers.

b. **Crowding In:** After sharing the results of agricultural input interventions with input companies, Bayer Cropsciences, and Tropical Cropsciences crowded in by setting up demonstration plots, and engaging small holder farmers (growing cocoa, maize, cassava and vegetable farmers) in un-served locations within and outside the Niger Delta region without direct support from MADE.

Gender consideration

Women play significant role in the value chain as producers, wholesalers / retailers, processors and as big off takers. MADE worked with Quintessential Business Women Association (QBWA), a women business management organisation (BMO), to support the lead firms to mainstream gender into their activities. Some of the gender considerations QBWA supported included working with gate keepers in farmers cluster to help mobilise women to demos, supporting the lead firms to determine the best times (suitable for women) to organise demo plots, recruiting female service providers etc. This led to a significant increase in female participation in the demonstration plots.

Sustainability of farmer engagement strategies

The agricultural input companies have adapted the models to suit their business operations. Saro Agrosciences and Syngenta are working end to end in selected value chains – from input marketing to output procurement. They organise demo plots and various farmer education programmes for crop cultivation and link commercial offtakers to farmer groups that attended their demos. The farmers may or may not be contracted. Their value proposition is that targeted farmers often have better quality produce (with little or no harmful chemical residue) that meets the quality requirements of big offtakers. The agricultural input companies are expanding the activities into new geographic areas by recruiting new agrodealers and Sprayer Service Providers. They are organising demonstration plots and using IEC materials that promotes adoption and safe use of inputs in old geographic areas.

CHAPTER FOUR

HOW WE FACILITATED THE CHANGE

Increasing competition within the industry has led to thinning profit margins, which has driven more aggressive marketing and catalysed changes in company structures.

Intervention Evolution

At conception of the pilot, using the existing agrodealers were the preferred channel for organising demonstration plots and growing the agrodealer size. MADE worked with the agricultural input companies to co-create suitable models that they could assimilate into their operations.The programme encouraged adaptation by constantly reviewing the intervention progress with the input companies' Field Managers and with their Senior Management. Overall, the programme's strategy was to get Senior Management's buy-in to incorporate farmer engagement and outreach into their business operations and continue to innovate around this. As a direct result, Saro Agroscience called a "timeout" on the first trained set of sprayers because the quality of their spraying service was poor. Saro decided to introduce Dr Saro who oversee and supervise the work of the sprayers. Syngenta decided to brand agrodealers' shops and include sales targets as part of the performance targets of their technical field representatives.

Before the interventions, the programme asked the input companies to clearly define their key performance benchmarks and indicators. The programme used this information to tailor support (especially monitoring and reporting) to help the companies achieve their objective which in turn will lead to long term sustainability. Saro, for example, said it wanted to use the engagement for new product development and introduction – a performance measurement was the sales of its newly introduced products, which are often difficult to sell. Syngenta used it as a means for increasing awareness for its products and teaching farmers the benefits of using its products as compared to competitors. CONTEC was interested in using it to develop new channels, while CANDEL was interested in increasing its market share. Based on this, the agricultural input companies had slightly different approaches but the core point for the interventions and support to them remained – improving poor farmers productivity through better access to good quality farm input and promotion of Good Agricultural Practices.

Challenges and Risks

The agricultural inputs intervention faced many challenges and risks over the 5 years of implementation which it had to overcome or adapt to. The list below highlights a few,

a. **The devaluation of naira,** between 2016 and 2017, increased the cost of inputs and affected farmers' affordability of inputs. It also led to foreign exchanges shortages affecting the agricultural input companies' financial capacity to import, as well as financial losses as the real cost of inputs had increased beyond the sales price. This led to stock outs and unavailability of the needed products during the 2016 -2017 season. It has also led to a 150% increase in the Naira price of the inputs that must be imported. But the value proposition of the use of agricultural inputs far outweighs this constraint.

b. **Government interference** in the procurement and distribution of fertiliser with unsustainable subsidies is always problematic. On the one hand, it makes it more challenging for private sector firms to sell direct to farmers who are waiting for the subsidized inputs. On the other hand, it can change the incentives for private companies to target government as their market, rather than selling to farmers. While the government policy pulled away from subsidies during and following the financial crisis created by the devaluation, opening up more space for the private sector (and in some ways forcing them to market direct to farmers), the government of Nigeria is ever ready to re-institute the subsidies when it has the funding, which could distort the market in the future.

c. **Security Constraints** remain a big problem in the Niger Delta. Incidences of militancy disrupted intervention activities in some states, and maintains the perception of high risk for the firms to invest in developing the Niger Delta market. Security constraints limited the ability of the input companies to send representatives and organize demonstration plots in some areas. This risks is heightened in the creeks and riverine communities where militant and communal clashes frequently occur. However, closer relationships with the agro-dealers, who are local residents, can help the lead firms get around some of these concerns.

d. **Human capacity constraints within lead firms:** Springfield Agro's supervising staff did not have the local knowledge required nor were they willing to oversee the demonstration plots which the firm was to support. A key lesson emanating from this experience is that thorough due diligence on partners, which will include an assessment of the capacity and willingness of the firm not just at the executive level but also at the regional/local level where the resources required for the successful implementation of the intervention will be sourced.

e. **High vulnerability of smallholder agriculture** to external shocks makes investing in inputs more risky. External shocks, such as weather (primarily flooding in the Niger Delta), disease, and pests. For example, Fall Army Worm Infestation outbreak infected maize farms in the Niger Delta, reducing yields and making farmers investments in herbicides, improved seeds or fertilizer unprofitable.

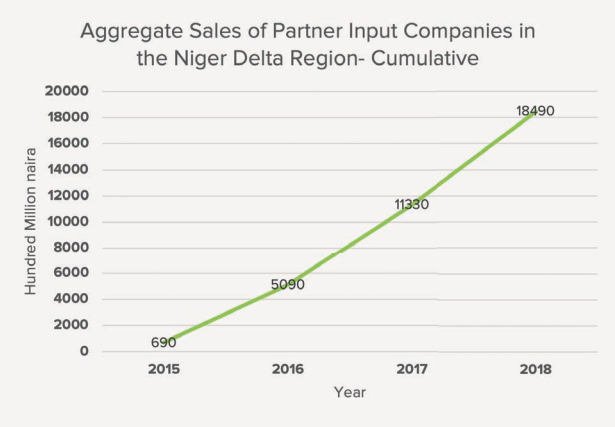
f. **With the accepted use of agricultural inputs**, there is an increasing problem of the sale of fraudulent product. The most important lead firms, such as MADE's partners are selling true product, but as price sensitive farmers understand the value of using inputs, but not necessarily how important quality is, they can purchase cheaper fake products, usually from Asia. The danger is that if farmers try the fake product, and it does not work, then they will stop purchasing at all. This is a big concern to the real companies and they are emphasizing branding and instituting quality control measures on the agro-dealers to combat it.

The Results

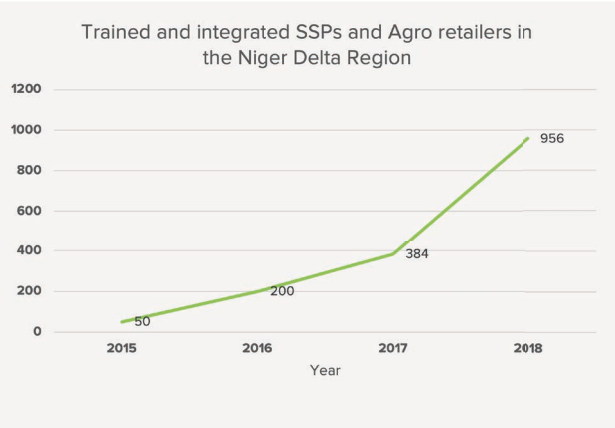
MADE's agricultural inputs intervention played a significant role in the development of a more effective and commercially driven agricultural inputs sector in the Niger Delta. There were many constraints and challenges along the way, but the strength of the model and the engagement with the private sector led to very positive outcomes. The evolution of the intervention followed a fairly typical market systems curve of gradual development of the outreach and outcomes, with the results accelerating over time. The purpose of the intervention was to expand awareness of the SHF of the benefits of the use of agricultural inputs, the increased adoption of GAP, and the value proposition for SHF to invest in improved inputs. But this could only be achieved at scale by changing the way that the market system engaged with the farmers.

System level results

The ultimate test for driving firm level behaviour and ultimately systemic change by the agricultural input companies was an increase in their sales and profitability in the region. During the life of MADE, the sales by the input companies increased significantly, indicating their gradual expansion in the region and the sustainability of their operations.



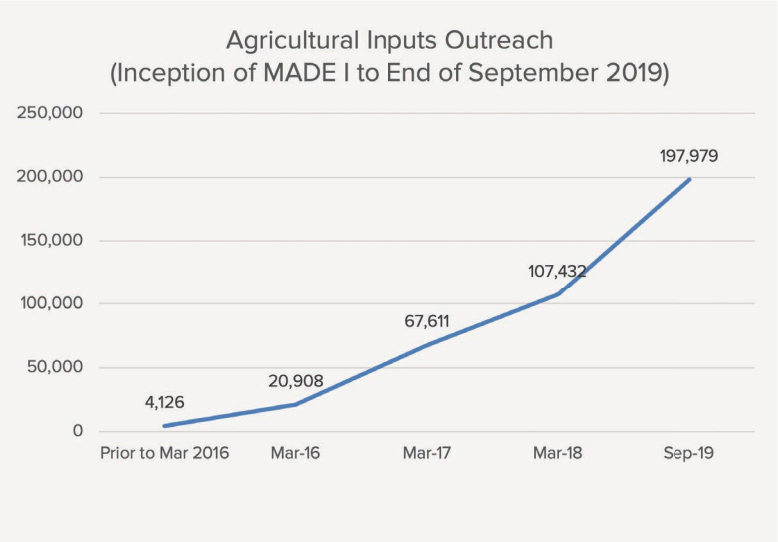
The second part of the system level change is the deepening of the outreach and increased proximity of the agricultural inputs to the SHF. As the lead input companies expanded their outreach, their relationships deepened with local service providers who were carrying out the actual demonstrations.



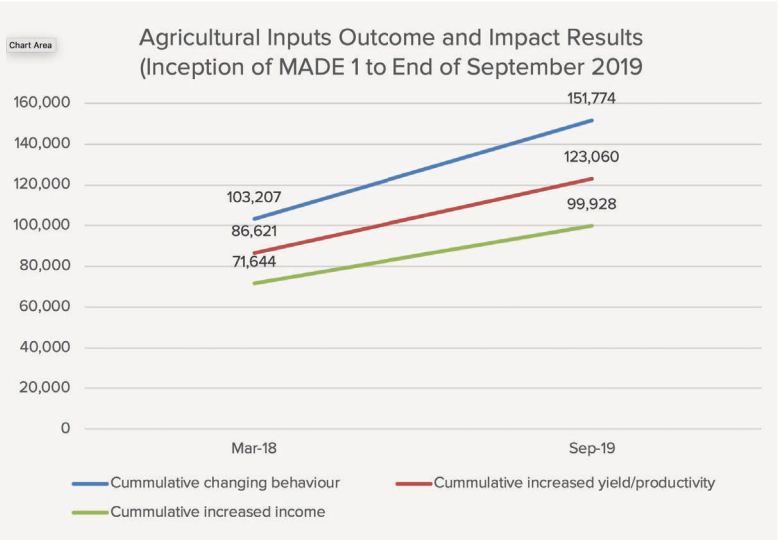
The sustainability of the service provider level is further highlighted by the continued use of the demonstration model by service providers even after the intervention period. MADE's follow up surveys highlighted that 55% of agro-retailers who had participated in the programme had adopted the approach as a permanent part of their business model.

Farmer Level Results

The model using the agricultural input companies to drive outreach and behaviour change at the farmer level was very successful. It took a year for the pilots to prove the approach, then another year to crowd in some more companies. MADE was only able to track the results from our direct partners (rather than being able to include results from other firms who were copying the approach as well), so the table below reflects only the outreach achieved directly from our interventions. The implications of the change at the system level is that a far larger number of people benefited, but we have no way of directly counting them.



Given the timing of the agricultural seasons, there is always a lag between demonstrations and adoption, and then adoption (intermediate outcome) and the increase in productivity or sales (ultimate outcome) of the intervention, followed by significant increase in income. It can take up to three years for a farmer to participate in the demonstration, start to adopt some of the practices, expand on the practices, and ultimately increase their income.



In previous years before the Syngenta/MADE intervention in this village, I have been leasing out a large part of my large cocoa plantation because I was not getting any meaningful income from this farm. But in 2016, I had an opportunity to attend the demonstrations organized by Syngenta in this village. I have now adopted some of the things we were taught such as pruning, logging, use of protective wears while spraying, use of ACTARA, REDOMIL and other pesticides. After that, my cocoa trees produced unprecedented fruits with very little signs of black pod infection. I haven't started harvesting but already I can see my yield this year will be impressive. In fact, I have resolved to terminate all my leases on parts of the plantation at the end of this farming year because now I expect increased yields and income". Mr. Agbeniga Machark, cocoa farmer in Ipogun, a village predominantly known for its cocoa farming, Ifedore LGA in Ondo State).

"I inherited this cocoa plantation from my father who died some years back. Poor yields prompted me to seek more knowledge on cocoa farming. That's why I joined the demos organized by MADE. I have realized a significant change in my farm. There is no sign of black pods after I started spraying with REDOMIL, ACTARA and other chemicals from trusted suppliers as taught in the demo, unlike when I used chemicals we used to buy from unverified suppliers. My cocoa trees have produced a lot more fruits and they are much bigger than I used to get. I'm expecting a higher yield and improved income at the end of this farming season". Mrs Aladesuyi Funke is a cocoa farmer in Ipogun, Ifedore LGA in Ondo State

"Through the agricultural input demo programme organized in my community between the period of March and September 2016, I have learnt new, easy and efficient ways of getting rid of weeds on my farm, through the use of selective herbicides. I have also learnt the new method of planting cocoa. I have adopted all these skills. I have seen a reduction in cost of labour in weeding my farmland as a result of the use of selective herbicides. I dont need to spend a lot of money employing labourers to weed as this is more expensive than using a herbicide. The new way of planting and spacing cassava we were taught is more efficient as the crops do not compete for nutrients and they grow well.Generally, farming has been made easy for me considering the fact that I'm getting old. Four of my neighbours have seen the progress on my farm and have met me for advice on how they can improve on their farms too. I very impressed with the programme so far and I hope there will be continuity and sustainability". Chief Modu Ihibioya is a mixed crop (yam, cassava, cocoa and maize) farmer in Arokho village, Owan East local government area, Edo

"In 2016, I harvested and sold 6 tonnes of water melon from 5ha of farmland. After attending GAP demonstration in 2017, I bought and applied Contec Global organic products on my melons. I have just harvested and sold 12 tons of melons from just 2ha.
Jude Ossai – *Obayantor, a water melon farmer from Obayantor, Ikpoba Okha LGA, Edo*

CHAPTER FIVE

OVERALL INTERVENTION IMPACT ON THE POOR

In the region, small-scale farmers planting cassava, cocoa, maize, yam, rice, oil palm, vegetables, and plantain have a better understanding of GAP and the farming inputs needed for optimum yield. 197,000 farmers (40% women) were actively exposed to new information on crop specific good agricultural practices and proper application of inputs. This was done through the establishment of over 900 demonstration plots across 270 LGAs facilitated across the 9 Niger Delta states by 4 lead agricultural input companies' technical field representatives, working with 976 agro-retailers and spray service providers. The demonstrations created opportunities for farmers to be linked with agro-retailers and spray service providers.

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The demo plots led to significant outcomes in terms of better quantity and quality of yields leading to increased adoption of GAP and inputs by smallholder farmers. 85% of farmers (63% women representation) reached are adopting good agronomic practices and using inputs. Farmers are adopting practices such as land clearing using herbicides, ridging and heaping (to reduce growth of weed), seed treatment and placement, weed and disease management using chemical and cultural methods, fertiliser application, insect control and general integrated pest management. In addition, about 13,000 farmers are purchasing services from spray service providers.

Based on the recognition of the importance of maintaining a balanced ecosystem, GAP promotes use of all methods in pest and disease control which favours the very poor farmers who are unable to purchase crop protection products. This method has enabled the very poor farmers to adopt no-cost beneficial practices such as spacing, ridging, optimal plant population, crop rotation, biological control of pest and diseases, etc. Farmers who can purchase inputs start off by utilizing herbicides to control weeds. The efficacy of herbicides and their relatively reduced cost (compared to use of manual labour, which is increasingly becoming scarce and expensive) drives its adoption. This lays the foundation for farmers to key into use of other pesticides such as insecticides and fungicides as well as fertilisers.

GAP adopting farmers are experiencing higher yields and incomes compared to farmers not adopting GAP. Average yield of farmers adopting GAP across maize, rice and vegetable crops (3.9 tons/ha) is higher than the average yield of farmers not adopting GAP (2.5 tons/ha), representing a yield increase of about 53% against baseline level. The total net income attributable to a combination of GAP demos and delivery of spraying services by September 2019 to beneficiaries was £12,270,762

CHAPTER SIX

CONCLUSIONS AND LESSONS LEARNED

A number of conclusions about farmer and firm level behaviour can be drawn from the intervention which are important to keep in mind for future programming and results measurement.

a. **Farmers adopting GAP** does not necessarily mean they must have the resources to buy inputs before they can see the benefit. Changing practices such as plant spacing, planting depth, pruning, fermentation etc., can also improve farmers' productivity. But the ultimate impact for the farmers can take several years as they watch the demonstrations one year, adopt some practices the next or try small amounts of inputs and then only fully apply them in the third year.

b. **Farmers often practice mixed-cropping**. They often have questions about all other crops, including those not in focus for demonstration. Field representatives have to be knowledgeable enough to answer varied range of questions. This opens an opportunity for the agro-dealers to introduce even more products and learning to the SHF, increasing their connectivity with their end market.

c. **Choice of crops for demonstration** should take into cognisance the cash crops in the local communities. For example, Bayelsa farmers told CONTEC to change its demo to Plantain instead of Cassava, a much more commercial crop for them.

d. **The input companies** have to be clear on what they want to achieve before starting a farmer engagement programme and how better understanding of their end market will increase the value of the company. Helping the input companies to articulate and deliver this value proposition is critical to long term sustainability.

e. **In the design and implementation of interventions,** programme Managers should continuously engage with both the Senior Management and frontline state managers of the lead firms. Programme should ensure that its support is along the internal reporting lines of companies and the intervention should provide support at all levels. Carrying responsible staff of the lead firms along makes it easier for the companies to assimilate and operationalise the intervention activities better.

f. **Agricultural input companies are rational economic actors** who will seek to maximise their returns off one investment before moving onto the next. Convincing the lead firms to move into the Niger Delta was the first step. But the Niger Delta is vast with a great number of different economic zones. Once an agricultural input company invested to move into one zone, it sought to capture the most benefits before moving onto another zone. This was especially true as MADE was trying to convince the firms to invest in riskier and riskier areas, when they still had market to capture in original zones they had entered. This required continual incentives to entice the firms to move from one part of the Niger Delta into other parts of the Niger Delta, where they would not normally have moved.

g. **Initial efforts to drive the adoption of new approaches** by the lead firms were most effective when they were fully adopted by their local service providers (the agro-retailers) who then drove the engagement with the farmers. The last mile delivery of the inputs is dependent on the agro-retailers and the lead firms need to develop win-win relationships with the entire distribution channel from the distributors to the agro-retailers and down to village based agents.

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