



Propcom Mai-karfi: Lessons Learned, 2012–2017

Propcom



Mai-karfi

Making rural markets work for the poor

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Abbreviations

ACI	Agriproject Concepts International
CAHW	Community animal health workers
CBO	Community-based organisation
DAP	Demand aggregation platform
DFID	Department for International Development
FCT	Federal Capital Territory
GAP	Good agronomic practices
GES	Growth Enhancement Support
GIZ	German Development Agency
IFDC	International Fertilizer Development Center
LGA	Local government areas
NAFDAC	National Agency for Food and Drug Administration and Control
NGO	Non-governmental organisation
NIRSAL	Nigeria Incentive-based Risk Sharing System for Agricultural Lending
NPK	Nitrogen, phosphorus and potassium
NVRI	National Veterinary Research Institute
PM	Propcom Mai-karfi
ROPO	Raise Out of Poverty
SSP	Spray service provider
SWOFON	Scale Women Farmers Organisation in Nigeria
TAP	Token Administration Platform
TOHFAN	Tractor Owners and Hiring Facilities Association of Nigeria
TOOAN	Tractor Owners and Operators Association of Nigeria
VCN	Veterinary Council of Nigeria
VSO	Voluntary Service Overseas
WACOT	West African Cotton Company Ltd
WEE	Women's economic empowerment
WISE	Women In Sustainable Enterprise

What is Propcom Mai-karfi?

Propcom Mai-karfi (PM) is a market systems programme, funded by the United Kingdom's Department for International Development (DFID) with UK aid, which seeks ways to make northern Nigeria's rural markets work for the poor. By the end of its initial six-year term 2012–2017, Propcom Mai-karfi had raised the incomes of 665,000 poor rural people across northern Nigeria. This was achieved by engaging with private-sector companies, state and federal governments, community-based organisations and a variety of other motivated partners. Through its partnership approach, PM has stimulated £27 million in private and public investment in the rural economy. Based on this success, an extension phase allows activities to continue beyond 2017, with a greater focus on the country's northeastern states.

This publication was born out of a desire to share the learnings that have come out of six years of experimentation and implementation in the challenging, unpredictable, but vitally important rural markets in northern Nigeria. The learnings are presented with PM's next phase in mind, and in recognition of the many other programmes, organisations, investors and entrepreneurs who seek to bring wider opportunities to the rural poor, whether in northern Nigeria or elsewhere. Therefore, the objective of the publication is not to celebrate the successes of PM alone; it is to share what worked alongside what did not work. It will describe each intervention's original rationale; what happened along the way; and what PM and its partners learned. Some of the efforts achieved sustainable impacts and empowered smallholder value chains that continue to operate and grow, while other experiments ran aground on unanticipated obstacles. All the experiences offer valuable lessons that need to be understood more widely, and this understanding can only be achieved by telling the full stories.

PM has brought about changes in markets that matter to poor people, and that are likely to grow significantly in the years ahead. The programme has sought to improve the competitiveness and efficiency of these markets to make room for innovation, investment and opportunity all along value chains, while ensuring that the benefits extend to low-income men and women in the rural north. PM has formed commercial relationships among large processors, traders and smallholder farmers; increased private investment in the rural markets that give the poor access to productivity-enhancing goods and services; and targeted gender constraints to help women play more significant roles in value chains and at higher levels.



Making markets work for the poor: a lineage of systemic change

In bringing about these changes, PM has operated under the approach known as ‘making markets work for the poor’ (M4P). The aim of M4P is to achieve systemic change in markets, guided by a thorough understanding of market systems, their participants and their constraints. As systemic change implies lasting impact, a programme like PM has to focus on sustainability and scalability at every step. It has to empower private and public-sector players to build better systems with strong mutual benefits that will drive value chains as they persist, expand and undergo positive “crowding-in”. The change agents may be private companies seeking to establish market systems that will meet their needs for suppliers or customers, but everyone involved, including poor men and women, will have an incentive to participate.

In pursuing the M4P approach in northern Nigeria, PM drew inspiration from a number of other programmes addressing smallholder farming and M4P; the most important of these was PM’s direct predecessor, Promoting Pro-Poor Opportunities in Commodity and Service Markets (PrOpCom). PrOpCom was funded by DFID from the end of 2005 to 2011. An innovative M4P programme, it began with a pilot phase that reshaped the rice value chain in Kano State and southwestern Nigeria, before expanding to 15 interventions that included agricultural mechanisation, input and service markets, and policy support for smallholders. Over its duration it stimulated £4 million in private-sector investment; created 17,633 jobs; achieved more than £40 million in incremental net income for more than 1.2 million direct and indirect beneficiaries; and drew lessons which the Propcom Mai-karfi team can learn from and build on.

Learning from PrOpCom led directly to the formulation of PM, focusing on the north of the country – the second part of the name, Mai-karfi, means “stronger” in Hausa. The PrOpCom interventions that carried through into PM’s agenda were those around tractor and thresher services (page 10), fertiliser markets (page 14) and rice parboiling (page 48). PM launched in 2012 with a new focus on northern Nigeria, seeking new markets, and looking ahead to six years of new ways to catalyse market changes.



The ten big lessons

1. Where value-chain participants have little capacity and face many challenges, as in northern Nigeria, do not be afraid to go beyond strict M4P ideals

A programme operating under the ‘making markets work for the poor’ (M4P) approach must make frequent choices about whether to play a direct or a more facilitative role – for example, whether to provide training to farmers directly, or to engage a partner from the private or public sector with an interest in delivering training over the longer term. M4P in the strictest sense is based on leveraging the latter approach, but the successes of PM more often hinged on making the right choices at the right stage.

In reality, potential partners in northern Nigeria were often not the high capacity yet socially conscious market players that an M4P programme seeks. Some of the core functions were left to PM itself, which sometimes took it outside the bounds of the pure M4P approach. For example, PM operated as an investor where early finance was necessary to catalyse additional lending; this paid off in cases such as the Raise Out of Poverty bonds issued by Babban Gona (page 38) and AFEX Commodities Exchange (page 42). PM provided capacity building for groups such as the women rice parboilers (page 48) where this was clearly necessary. And it had a hand in shaping government policies for community animal health workers (page 54) and fertiliser markets (page 14). PM made these choices with full consideration for the sustainability of the interventions and, ultimately, they contributed to getting certain value chains which are important to poor farmers up and running from an extremely low base in remote, rural, sometimes conflict-affected areas.

2. Access to finance is a nearly universal challenge in northern Nigeria

If there was one need that permeated almost every intervention that PM undertook, it was access to timely, affordable finance. Finance was either completely unavailable – as is typical in the case of smallholder farmers or household processors – prohibitively expensive due to high interest rates, or inaccessible because of requirements for credit history



or simply because commercial banks lack confidence in the ability of smallholders to repay loans. Partners of every size tended to operate within the tight boundaries of their working capital, which set hard limits on scaling up. Nigerian banks have no history or intention of lending to the rural agricultural sector. They proved to be extremely risk averse and unwilling to actually function as banks in the accepted sense, that is, as managers of risk. Religious restrictions on charging interest on loans in Muslim communities was also sometimes a limiting factor.

Throughout its duration, PM became increasingly involved in facilitating (if not directly providing) finance at every level. PM worked with the Nigeria Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) to facilitate access to reduced-interest, guaranteed loans in the agriculture sector. Microfinance institutions active in northern Nigeria proved to be dependable partners for micro-entrepreneurs such as rice parboilers (page 48). Larger borrowers were sometimes successfully linked with commercial banks (Tractor Owners and Hiring Facilities Association of Nigeria, page 10), but in other cases needed to get on the finance ladder through PM

itself, as with AFEX (page 42) and Babban Gona (page 38), whose bonds PM purchased to provide working capital and a borrowing history. This was also the case with returnable grants provided to the community-based Quintessential Business Women’s Association for aggregating and selling members’ produce (page 46) and to an indigenous company, Pye-Ryat, to procure raw acha grains from its largely women producers (page 34). PM’s shea intervention in particular marked a turn towards finance and led to the establishment of a dedicated access to finance portfolio in 2016. However, if this had been a pillar of PM’s approach from the start it could have led to an earlier understanding of the landscape of finance.

3. Empowering women means identifying sectors in which they are most active and working to improve their ability to compete

PM set very high goals from the beginning to ensure that women would benefit from its interventions. However, it became apparent two years into implementation that reaching women in northern Nigeria was not straightforward and that a mainstreaming approach alone would not yield results. An in-depth scoping exercise, with support from WISE (Women In Sustainable Enterprise) Development consultants, helped PM to understand that, in northern Nigeria, achieving sustainable women’s economic empowerment (WEE) outcomes means intervening in some of the agricultural sectors in which women dominate, and which are important to their livelihoods. Whether acha processing (page 34), shea nut harvesting (page 44), backyard poultry rearing (page 58), small ruminant keeping (page 60) or rice parboiling (page 48), certain activities are widely open to and pursued by women in the region, and PM could not ignore these. The women involved in these value chains were often eager to improve their businesses. They made considerable progress when they were able to overcome some of the constraints that held them back: limitations on their mobility; power imbalances in negotiating with men; or poor access to information, inputs, finance, services and markets.

Much of PM’s progress was achieved by drawing on the collective strength of women’s groups and women-led community-based organisations (CBOs), with PM contributing solutions tailored to their needs. These solutions included tools such as capacity building in business skills and establishing links with buyers, as well as facilitating the purchase of equipment such as tillers (page 10) and clean cook stoves (page 50) on favourable terms. It was also recognised that reaching women would take extra work and investment by the project for paying attention to religious and socio-economic factors and dealing with time constraints and capacity needs. The recruitment of women, as procurement agents, input



retailers and lead farmers, offers successful approaches to impact on women in rural northern Nigeria. Involving women led to positive outcomes: recruiting women as agents in the fertiliser (page 14) and crop protection stores-in-shops (page 28), among other interventions, increased the reach of these agricultural inputs.

The 50% women’s inclusion target set for PM at the beginning of the programme was very ambitious given the predominantly Muslim context of northern Nigeria. It was thus also a lesson for the programme in designing expectations for its next phase.

4. Service provision models can meet many needs, if all participants benefit and have steady access to equipment, supplies and information

PM experimented with service models for everything from land preparation and threshing (page 10) to application of inputs (pages 32 and 38: sprayer service providers and Voluntary Service Overseas) and livestock vaccine delivery (page 54). These efforts had a variety of advantages – such as year-round use of tractors, or properly applied crop protection products leading to better health and environments. However, they also revealed that service providers were already operating in many communities and, unless included in the new models, these people potentially risked displacement (page 33).

PM found that service providers were available and enthusiastic when a business offered a good livelihood opportunity. However, the success of a business also depends

on other factors in the wider market environment. For example, even the most entrepreneurial of service providers had limited agency to operate when a thresher broke down or vaccine supplies were unavailable. Embedded as they were within larger supply chains, their effectiveness depended on the smooth operation of the whole market system.

PM also found that information services are a primary need in northern Nigeria and can be valuable contributions to market systems on their own. Information services may take the form of a demand aggregation platform for cooperative members (page 16), a Touch and Pay system for the government-administered Growth Enhancement Support scheme (page 16), or the provision of weather information to smallholders (page 20). However, each of these needs a solid business model and ownership by a committed partner who will continue building on its potential.

5. Existing groups, community-based organisations and other structures can be effective in reaching smallholders with new market activities, but capacity building and group strengthening may be necessary

Northern Nigerian farmers are familiar with a host of groups, cooperatives and organisations established over the years – often set up by external development agencies, or with the intention of receiving specific government inputs. PM also became familiar with these structures and followed a general strategy of engaging groups and building their capacity rather than creating new ones. This was often very successful and allowed PM to link more smallholders to new opportunities and activities.



For instance, agricultural cooperatives in Niger State came to play an increasing role in meeting farmers' demands for fertiliser (page 14) with the deployment of an electronic demand aggregation platform. Community-based organisations, with some assistance in training vaccinators and carrying out community awareness-raising, were able to act as key distribution links to bring the poultry vaccine NDV-i2 to smallholders (page 54). Other community-based groups ventured into commercialisation, aggregating and selling members' produce to commercial buyers; this too required support from partners to build business skills and set quality standards. The groups that successfully made the jump into new roles brought their past experience with them and, more importantly, they brought energy from members and leaders with a desire to pursue fresh opportunities and address constraints to their businesses together.

6. Monitoring should start from day one and continue dynamically, in sync with agricultural markets and seasons, to provide data valuable for both the programme and its partners

At the start, PM assumed that private-sector partners would provide all necessary data. It soon became apparent, however, that most businesses were only interested in two sets of data: expenses and revenue. Beyond this, PM realised that all monitoring would be the role of the programme. Halfway through the project, PM began building a dynamic, adaptive monitoring system to guide interventions, provide up-to-date management information internally and inform partners of issues in the field. This led to frequent data collection alongside intervention activities and increased the potential for using timely information that matched narrow private-sector windows of opportunity.

7. Environmental impacts and resilience are not just matters for assessment, but issues to address from the beginning as part of an intervention’s net benefits

In 2013, PM recruited an environmental specialist to ensure the programme focused on the environmental impacts of interventions as well as on resilience: how market systems would affect the surrounding environment; how climate change would affect those market systems; and how PM could build smallholders’ resilience to climatic shocks while preventing negative impacts. Coming relatively early in the programme, this was an opportunity to assess negative and positive impacts along each intervention pathway. Sometimes retrofitting ongoing interventions was more of a challenge than designing interventions around positive net benefits for the environment and smallholders.

As a result, PM designed interventions with a climate-smart focus. One of the interventions was the introduction of improved clean cook stoves (page 50) among women involved in rice parboiling. These minimised the negative impacts of rice parboiling activities, but it was their positive potential – for saving money on charcoal and protecting users’ respiratory health – that drove their adoption. Conservation agriculture input kits (page 26) were another intervention planned around the benefits for farmer resilience and the environment. In this case, the initiative set the private-sector partner on a longer-term path to introducing a form of agriculture with transformative potential. In crop protection interventions, environmental concerns meant that PM had to ask one partner to stop promoting a product that was banned in other countries (page 28: Store-in-Shop). In this and subsequent interventions, these concerns generated an interest in service provision models to maintain best practices in spraying. Such a model came to the fore in the sprayer service provider intervention (page 32).

8. Shocks that put the brakes on an intervention can be as big as a national economic crisis or as small as a single manager’s departure

In 2016, the value of the Nigerian Naira fell sharply against the dollar and foreign exchange reserves quickly ran dry. With prices of many imported goods doubling or worse, the forex crisis had ramifications throughout the country’s economy. Nearly all of PM’s activities were affected in some way, and the financial implications of many interventions changed overnight. Taking out loans for tractors (page 10) became very difficult for would-be service providers, as the cost of a down payment rose to nearly the full price of the machine at the start of the year; this in turn affected how much farmers paid for tractor services. Forex-related supply problems also disrupted the flow of crop protection products (page 42) and the equipping of large-scale processing facilities, as for shea (page 44). As grain prices rose, farmers with good market access benefited, but buyers who were attempting to improve market access for smallholders experienced a substantial need for capital. This was the case with the buyer of acha (page 34), which required a returnable grant from PM in order to make purchases from farmers. Another significant challenge for the programme was the insurgency in parts of northern Nigeria and the ensuing security challenges which made some states difficult to access. For example, in the fertiliser market, urea was restricted by security agents from reaching farmers/businesses in parts of the north as there were fears that it was being used by insurgents as a raw material for bombs.

Macro-scale shocks are difficult to plan for in an M4P approach as one of its basic assumptions is the continual growth of the overall economy. There is a need to plan for these risks for each individual intervention but, even in its role of risk sharer, it is hard for a programme to prepare for something as far-reaching as a currency losing significant value.



Meanwhile, other disruptions came at micro level. One particular risk that PM came to recognise was the consequence of operating through a single “champion” or point of contact in a partner organisation. After a highly successful pilot of soap and handwashing education with a private manufacturer (page 52), the sales director who had championed the venture in the company departed, and what seemed to be a close and promising partnership abruptly ended. The store-in-shop pilot for crop protection products (page 28) was another instance where a director left the company and took much of the vision for the model with him. As is often the case in M4P programmes, PM relies heavily on thought leaders in the private sector who push to do things differently. Although such individuals will always be important in the business world, such leaders also need to build teams to institutionalise their strategies, and M4P partnerships need to broaden and make a case to other influential members of a company.

When it comes to windows of opportunity, the agricultural sector is unforgiving in its seasonality. Small delays in intervention activities sometimes meant that a partner missed the right moment in a season and lost an entire year of progress. This happened at planting time with fertilisers (page 14) and mechanised land preparation (page 10: tractors and tillers), later in the season with crop protection products (page 30: Saro Agrosiences Limited) and at harvest time with threshing (page 38: tractors and VSO) and purchasing produce (AFEX). Delays can even sometimes be generated internally as result of the lengthy contracting and procurement processes of a donor or implementing company. The private sector is accustomed to moving fast, and an M4P partner must strive to have the adaptability to keep up.

9. Government policies and interventions cannot be ignored, and should be treated as more than just risks

Nigeria’s government takes a strong role in development, and its activities and policies partly formed the context in which PM’s efforts unfolded. This could be problematic: direct supply and subsidy programmes brought unpredictable distortions to smallholder fertiliser markets (page 14); an Anchor Borrower Scheme for rice farmers diverted seed supplies (pages 22 and 38: West African Cotton Company Limited – WACOT – and Saro); and restrictions on the dissemination of weather data deterred the development of appropriate information services for farmers (page 20).

Elections in the country can bring their own set of problems. Activities often slowed down for PM because of reasons such as security and changes in leadership. New partnerships are

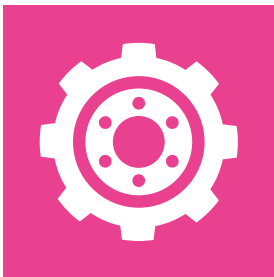
slow to take off in the run-up to federal and state elections because of sustainability concerns. Newly emerging leaders often bring new visions for an agency, ministry or parastatal. After elections things can remain significantly slow for another few months as result of handovers, swearing-in ceremonies, and new leadership finding its feet and vision. This often means that more than half a year can be lost with some interventions, or that things slow down exponentially or are not started or sustained.

At the same time, some of PM’s achievements have come through working with government actors. In the fertiliser market, PM collaborated on an ICT-based registration and redemption system for a government input scheme that delivered verifiable inputs to a large number of farmers in a short time (page 16: Growth Enhancement Support); this gave the public sector important proof of concept for reaching remote beneficiaries with electronic systems. PM also set up consultations on a much-needed law to regulate the fertiliser market, providing evidence from its own interventions of routes forward. Another lasting policy legacy has been the nationwide introduction of community animal health workers (page 54), a model for which PM not only advocated, but also provided assistance in developing an up-to-date training curriculum. In a country where government decisions have such an impact on agricultural markets, it is hoped that PM’s policy legacy will make this impact more empowering for smallholders.

10. Long-term sustainability is built on short term learning by doing

A purist view of M4P means conducting market studies, pinpointing what leverage point will trigger systemic change and working on that point. The view from the perspective of northern Nigeria is very different. In practice, all points in agricultural markets are interconnected, and there will always be more to learn about a sector as partnerships and activities develop.

PM achieved the most when it proceeded like other actors in a market sector and learned by doing. Among the many pilots described in the pages that follow, not all led to a sustainable change in market systems – and PM never anticipated that all of them would. The approach of piloting, testing, refining and scaling up many different ideas at once, with many different partners, ultimately paid off in a small number of big successes. These successes, built on learning by doing, are the ones that are being carried forward to sustainable change. It is not PM carrying them forward, but its partners in learning: private companies, public agencies, grassroots organisations and the hundreds of thousands of smallholder farmers who are ready to make markets work for them.



Tractor service providers



To expand the number of tractor service providers, PM linked a private tractor owners' association with finance and technical innovations.

THE PLAN

The very high unmet demand for mechanisation among smallholders, particularly for the enormous job of land preparation, was clearly understood when full implementation of PM started in 2013. This unmet demand underlined the potential of a service provision model based on tractor owners and operators offering their services for a fee. The two major constraints in this market were a lack of financing options for buying tractors and other equipment, and a need for tractor associations to form better, more sustainable business relationships with other market stakeholders (commercial banks, tractor vendors, etc.).

The plan was for PM to act as an institutional guarantor for a loan to enable a private tractor owners' association to purchase tractors; this would serve as a lending model to encourage other banks to consider extending loans for tractors. PM initially approached this intervention in partnership with the Tractor Owners and Operators Association of Nigeria (TOOAN), an association focused on the longstanding government

procurement channel. However, in pursuing the development of a private channel PM soon shifted its partnership to the Tractor Owners and Hiring Facilities Association of Nigeria (TOHFAN), a new group with a wholly private interest. The partnership with TOHFAN has extended across 13 states and continued throughout PM's duration.

THE EXPERIENCE

The intervention strategy hinged on the idea that a successful lending experience would generate further financing opportunities. This idea proved to be correct. A pilot with 27 tractors in the first year quickly brought in several other commercial banks and tractor vendors. It also encouraged the Nigeria Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) to step into the role of guarantor; PM eventually helped NIRSAL to develop a mechanisation financing framework. This enthusiasm by lenders has continued to grow despite a doubling in the price of imported tractors due to the country's foreign exchange crisis. TOHFAN members currently operate 552 tractors across Nigeria, and over the next five years the association has ambitions of reaching 2,000.

The intervention has proven that a private sector led service channel is a fast and sustainable route to mechanising Nigerian farming. More than 90,000 farmers have been provided with services during the intervention, and impact studies show that these farmers achieve an average cost saving in land preparation of ₦26,397 (£59) per hectare. This has, however, come at an unplanned detriment to local manual labourers, as tractor power has displaced traditional manual field preparation.

Another issue with the model's very rapid growth is the continuing challenge of matching supply with the enormous smallholder demand. With the scale-up of the intervention, TOHFAN members are struggling to keep up with the expansion of the agents' network that identifies farmers in need of tractor services. A well-articulated strategy for expansion will be needed, potentially using an online platform – if this can be made accessible to rural smallholders.

Along with solutions for access to tractor finance, PM also introduced some key innovations to fine-tune the profitability of the service provision model. The introduction of GPS tracking devices from Cotek Integrated Technologies proved to be a major step in making tractors a safe bet for owners and financial institutions alike. Since the first purchase of tractors in 2014, more than 400 tractors have been equipped with GPS trackers. Remote tracking of tractor locations and activities has maximised the productivity of the machines and coordination between owners, operators and banks.

In 2015 and 2016, PM and TOHFAN began to innovate further, introducing postharvest attachments to increase the seasonal uses and year-round profitability of tractors and speed repayment of members' tractor acquisition loans. The first attachments to be trialled have been tractor-powered threshing machines for rice and other crops. Threshing services also proved popular with farmers, indicating that this is a relatively low-cost way for tractor owners to boost the benefits of their investment for themselves and their customers. However, the threshing machines purchased in Nigeria were not sufficiently reliable for TOHFAN's uses; domestic purchase of this equipment was necessary from an economic perspective, but the attachments needed to be of higher quality, less prone to break down and easier to transport between smallholders' fields in order to be a viable investment. The potential of such tools remains to be met by an enterprising fabricator.

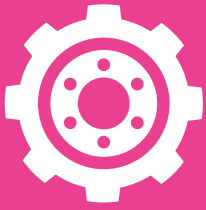
Most importantly, both federal and state governments have learned from PM and TOHFAN and have begun shifting their focus in procurement practice towards this private provider model. The Federal Ministry of Agriculture and Rural Development has signified in policy documents that it will support the TOHFAN model instead of direct procurement.

NIRSAL, for its part, has raised its institutional guarantee for tractor loans from 20% to 75%, having learned from the intervention that this area of lending can be low risk. It continues to play a vital role in financing. Finally, at the end of 2016, the Bank of Industry announced a ₦10 billion (£22 million) fund for the acquisition of agro-equipment by service providers. Directly inspired by PM's intervention, this fund is expected to create some 10,000 direct and 30,000 indirect jobs in the sector.



KEY LESSONS

- Once a finance model has been proven with one bank, other banks are likely to follow close behind.
- The private-sector approach to mechanisation has been highly successful; its main challenge now is to scale up to meet smallholders' enormous demand for services.
- Introducing the right technology – in this case, a GPS tracker – can ensure the profitable use of an investment and the trust of lenders.
- Postharvest implements add to the service potential of privately owned tractors, but the right implements for smallholder needs are yet to be manufactured in Nigeria.



Power tillers for women's groups



To expand the forms of mechanisation that fit the needs of women's farmers, PM arranged vendor financing for hand-operated power tillers.

THE PLAN

As PM's tractor intervention grew, the project found an unfulfilled gap in women's needs for mechanisation. Acquiring a tractor was impractical for women as they had smaller farm plots and lower purchasing power than men. Upon the identification of a power tiller vendor who primarily sold equipment to state governments, PM decided to build a model that would put this equipment in the hands of private operators, in the mould of the tractor intervention (see page 10). Although the tractor intervention was proceeding well, the growing group of tractor owners and operators did not reflect PM's gender target.

Power tillers appeared suitable, in price and in ease of transport and operation, for small cooperatives of women to use on their fields and to generate group income. For this intervention, PM reached out to 100 cooperatives belonging to the Small-scale Women Farmers Organisation in Nigeria (SWOFON) in Plateau

and eight other states. PM arranged a financing plan with the vendor so the groups could pay for the machines over a year. With around 20 women in each cooperative, the cost came to about ₦2,000 (£4) per member per month.

THE EXPERIENCE

In practice, repayments for the tillers followed a wide variety of forms. In some groups, a few women or even a single woman ended up buying the machine instead of sharing the cost evenly among members. Other groups followed an outsourcing strategy and gave the machine to an outside operator, who remitted funds that were used for repayment. These models generally worked well. It was managing contributions from all the members of a group, as originally envisioned by PM, that proved most complicated. Business management training, alongside the equipment and repair training provided by the vendor, could have helped the women to select the right repayment model for their group.

The most significant problem that the intervention encountered, however, was the availability of parts for repairing the machines. In the planned model, money raised from hiring out a tiller would pay for repairs. Yet even when groups had the funds and a local mechanic had been trained to make repairs, parts were not generally available. Furthermore, groups that were behind on their repayments were reluctant to take their machine to the vendor for repairs, worrying that it would be repossessed.

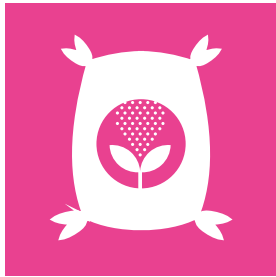
Thus, while PM's assessment of this intervention showed real benefits for the women's groups that were able to use the tillers, many of the machines were out of commission by 2017. Potential problems with the equipment could have been anticipated with a longer phase of evaluation for quality assurance over a period of months. While a more rugged machine with a more powerful engine would have been better suited to the fields, it would have come with a higher price tag that would likely not have suited the model of vendor financing for groups of poor women.

This difficult balance may be re-evaluated in the future, as another private company has recently brought new tiller models into the country to test and is considering setting up an assembly plant. These low-cost machines may also have further potential in the northeastern states, where security risks can make it risky to deploy expensive tractors.

KEY LESSONS

- Low cost, hand-operated tools proved suitable for small cooperatives and paid off financially when used on their fields.
- The major challenges that groups faced were in obtaining spare parts for the tillers and managing group repayments.
- Keep the scale of a pilot intervention small and manageable in a few states before scaling up.
- Ensure clarity and define the role of collaborators from the beginning.
- Appropriate training on the use and maintenance of equipment, as well as on business skills and running commercial enterprises, is essential.
- Piloting an intervention which needs a group of people to contribute an agreed amount of money to a venture does not always go well, one defaulter can throw the whole plan out.





Delivering smaller fertiliser packs to more farmers



To create a new input market that serves the bottom of the pyramid, PM (and earlier PrOpCom) worked with fertiliser companies and distributors to make smaller packs of fertiliser available.

THE PLAN

The private fertiliser market in Nigeria has not generally worked well for the poor; companies focus on a commercial strategy of selling large packages of fertilisers to large producers and governments. This has led to a market where rural dealers must break bulk, and smallholders are left with potentially fake or expired products that are not available consistently. The lack of an efficient rural distribution network, and a corresponding lack of private or public extension services, have prevented fertilisers from contributing what they could to smallholder production. Instead, these farmers end up waiting on government input schemes.

Interventions in the fertiliser market have been ongoing since the original PrOpCom project, and have changed strategy regularly to adapt to changes in the market. The goals throughout have been to encourage fertiliser companies to

produce small, affordable packs; to ensure a steady, timely supply of these to more rural smallholders; and to support their use with information on good agronomic practices (GAP). PM's interventions have covered 19 northern states, including the Federal Capital Territory.

The original PrOpCom intervention involved working with fertiliser companies to provide fertiliser in smaller quantities. Notore Chemicals pioneered the production of smaller fertiliser packs, in 1 kg and 10 kg sizes. PM continued working with Notore from 2012 to ensure this supply would expand and be backed up with training on GAP. PM also helped to build capacity among Notore's supervising village promoters (SVPs), who sell directly to farmers in villages; PM started to provide incentives to bring farmers to demonstrations and video training sessions. PM also began working indirectly with Golden Fertiliser, a leading company that began producing 25 kg packs, by linking them with distributors in the north.

THE EXPERIENCE

Throughout the intervention private-sector provision of small fertiliser packs improved steadily, becoming an accepted part of companies' businesses in northern states and parts of the south. PM developed credibility by delivering on early promises and sharing risks. A performance-based incentive structure additionally rewarded the achievement of milestone targets by all partners. Nevertheless, PM continued to find that fertiliser companies were not interested in investing to develop their own distribution networks to serve the bottom of the pyramid: poor rural smallholders.

Starting in 2014, therefore, PM adjusted the intervention's business model, signing agreements with distribution partners to create market pull through their networks. Ultimately, 17 distribution partners began working through rural promoters and independent salespeople selling to farmers in communities. As these networks were put in place, PM supported them in risk sharing and monitoring roles. Monitoring took some time to implement, but eventually PM was able to develop a dynamic monitoring system through which farmer reach could be observed live and fertiliser sales could be traced back to the original source. PM also encouraged the recruitment of female rural promoters as a deliberate strategy to reach more women with small packs of fertiliser. However, it was clear that female promoters faced additional challenges, including finance and business capacity, in making the most of the opportunity.

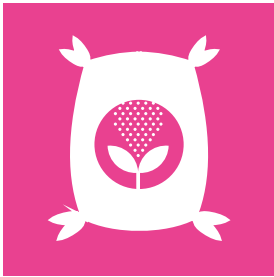
As in the tractor service intervention (see page 10), PM also engaged the Nigeria Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) to provide credit guarantees for banks that lent to distributors. Distributors, who have to purchase fertilisers and take them to rural areas in time for seasonal use, have the largest need for capital within the system. Rural promoters, in turn, often rely on distributors to advance them inputs on credit, so access to finance is an essential need that is still in the process of being met. NIRSAL has developed a financial framework to support fertiliser distributors, and PM is supporting the agency to ensure implementation.

GAP education was sometimes a challenge to implement across northern states, for a variety of reasons, but was key to ensuring sustainable adoption of the small fertiliser packs. Farmers needed information to achieve the economic benefits that these packs could bring, and needed to realise those benefits if they were going to continue to invest in inputs. PM brought GAP education to farmers through field demonstrations and events but also, more unusually, through video education. Video training was very effective for showing farmers the impacts of correct input use; the format spread easily throughout the north and brought GAP education to farmers in their leisure time.

As PM's longest running intervention with the largest number of beneficiaries by far, the fertiliser intervention has been an enduring success that has transformed part of the fertiliser market to meet the needs of the poor. However, it is changes in government policy that will dictate how far this transformation can go. Direct supply and subsidy programmes, and direct handouts by international non-governmental organisations (NGOs) threaten the sustainability of the private fertiliser market; therefore, actors in this market will need to advocate for their future roles in leading fertiliser procurement and distribution. Furthermore, Nigeria is still in need of a law to regulate the fertiliser market and support some of the emerging business models, for example, by preventing fake products. A bill for such a law has been drafted, for which PM arranged consultations and supported partners engaged in lobbying. PM will continue facilitating the review and passage of this bill, which will hopefully build on the fertiliser intervention as a showcase to create a policy environment where its business model will thrive.

KEY LESSONS

- Small, affordable packs of fertiliser are a prerequisite for the development of a private rural market that serves smallholders.
- Fertiliser companies are not interested in developing extensive rural distribution networks to reach the rural poor. However, other actors in the value chain – distributors and rural promoters – can fill this role independently, especially if backed up with access to finance.
- Promoting agricultural inputs can be a viable business opportunity for women; however, in addition to finance, they also need capacity building on how to manage and run such businesses.
- Education on good agronomic practices (GAP), which can reach farmers through video and field training, is important for making a business case to farmers and showing them why they should invest in fertilisers.
- Participants in the private fertiliser market will need to engage with policymakers to make sure that their roles, and the risks caused by direct supply and subsidy programmes, are recognised.



A Touch and Pay system for the Growth Enhancement Support scheme



To give greater accuracy and transparency to government input support, PM worked with partners to deliver an ICT-based registration and redemption system that was specifically designed for areas with little electricity or mobile access.

THE PLAN

As a pillar of the Nigerian government's Agricultural Transformation Agenda, the Growth Enhancement Support (GES) scheme represented a new role for the government, transitioning it from a direct procurer and distributor of fertiliser to a facilitator of procurement and active private-sector participation in the value chain. Given this alignment of aims, PM agreed to support the government in refining the scheme after its first two years of implementation.

The GES operates through mobile networks for farmer enumeration, redemption and reconciliation, and initially did not reach areas and individuals with limited mobile access. Many of the rural poor who could have benefitted from the scheme relied on a paper system that had proven to be vulnerable to

falsification of data and other problems. PM, working with the Federal Ministry of Agriculture and Rural Development, the International Fertilizer Development Center (IFDC) and Consult Hyperion, helped to pilot an alternative electronic system called the Token Administration Platform (TAP), or Touch and Pay. First used in the Federal Capital Territory (FCT) and Sokoto State in 2014, TAP was designed for areas with limited electricity and mobile networks, allowing enumeration teams to register farmers on tablets and store the data for daily syncing.

THE EXPERIENCE

Even with TAP, syncing and data transmission continued to be the main technical challenges in poorly-connected Sokoto State. At times the remote syncing process could take weeks. Until system enhancements could be made – including the

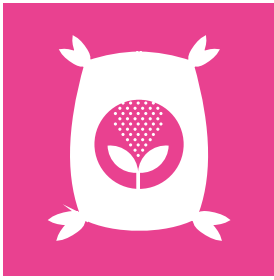
construction of a new 80-foot mast as a “last mile” internet connection in Sokoto – all 225 tablets had to be brought into the city of Sokoto regularly to synch with the server.

Although the technical hurdles were progressively overcome by partners, they contributed to problems of a more political nature. Fertiliser distribution is traditionally an activity with high potential for personal political gain, and some stakeholders were not interested in seeing the more transparent TAP system succeed. When the pilot faced challenges, and began to fall behind, some officials pushed to allow a return of paper-only redemptions. The intervention team resisted this, and in the end the TAP system proved itself. More farmers received their fertiliser, more quickly and more transparently than in any previous year in Sokoto State. Across the pilot areas 492,007 individuals – including 103,600 women – redeemed inputs. TAP was rightly seen as a success, and the government has continued scaling up the approach elsewhere in the GES scheme.

KEY LESSONS

- ICT-based registration and redemption systems are more inclusive of the rural poor in even the most remote regions so long as capacity exists to overcome technical challenges.
- Technical challenges can intensify political pressure against new systems, but this can be overcome by sticking to the principles of a pilot and achieving results.
- Suitable technological systems can help to ensure effective, transparent implementation and monitoring, particularly with government subsidy programmes.





Aggregating fertiliser demand through agricultural cooperatives



To bring smallholder farmers the inputs they need through their cooperatives, PM piloted an online platform that delivered fertiliser to areas of high demand.

THE PLAN

Like other PM interventions, the agricultural cooperative intervention aimed to give poor smallholder farmers greater access to input supply and offtake markets – in this case, through their membership of agricultural cooperatives. Cooperatives are plentiful across northern Nigeria; PM sought ways to empower these groups to reposition themselves as entrepreneurs, capable of aggregating inputs and facilitating market linkages on their members' behalf. This would be achieved with the help of an electronic demand aggregation platform (DAP) that would track and communicate their needs, whether for mechanisation services, seeds, fertilisers, crop protection products or offtake of farm products.

THE EXPERIENCE

Scoping for the intervention started in 2015; the Federal Department of Cooperatives provided PM with contact details of all agricultural cooperatives in northern Nigeria. Interest

was raised with the Niger State Cooperative Department, as well as with two cooperative societies in Benue State. Intervention activities ultimately proceeded in all 25 local government areas (LGAs) in Niger State. In planning the intervention, PM expected that the cooperatives would provide a straightforward link to their members, allowing easy access to farmer demand through their existing structures. The reality was different: many members had only joined the cooperatives in order to receive inputs from them and had not been regularly involved or easy to reach. In many cases, the membership lists kept by cooperatives were far from being the direct link to smallholders that was hoped for.

In this situation, DAP became the key tool for reaching the intervention's goals. To create it, PM enlisted a developer who had had experience working in the health sector, mapping primary health centres across Nigeria and the drugs and facilities available in different areas. The developer proposed a similar, online, real-time database for keeping up-to-date records of cooperative members and their needs. The

members report their needs to agents of cooperatives based in every LGA, and the agents register these in the system. The results are accessible through a dashboard where aggregated demand can be linked with interested suppliers or markets.

The pilot of DAP was a success in sending a clear signal of farmer demand. By far, the largest demand was for fertiliser. This market need was not being met because the government subsidy meant that the product could not be sold above a certain price and companies were not sure that farmers could pay even the subsidised price. PM's partners in the fertiliser market were interested in selling to the developer and implementer of DAP, but not to farmers directly. In the end, PM had to seek help from an investor and supplier in another state and had to incentivise them to fulfil the request. The supplier sold 6,000 bags (300 MT) of nitrogen, phosphorus and

potassium (NPK) fertiliser to cooperative members in Niger State in early 2017; the cooperatives provided logistics and warehousing through their offices. These sales reached three LGAs, and demand was just as high in the other 22 LGAs in the state, so cooperatives were eager for sales to continue. A second phase commenced later in the year to deliver another 6,000 bags, though this was partly disrupted by the collapse of the Jebba/Mokwa/Kontagora Bridge during a flood, which cut off some areas from delivery and caused fertiliser production delays within the company.

The DAP pilot demonstrated the potential of strengthening existing cooperatives. Members saw benefits in being more actively involved in their cooperative, and the associations adopted a highly visible role in collecting and fulfilling requests while PM stepped back. Even with the challenges encountered in the second phase of the pilot, farmers showed a high level of trust in the platform and were very willing and able to purchase their fertiliser when it was delivered.

The benefits of the platform have drawn interest from many other potential participants, including the Niger Cooperative Financing Agency, which has indicated interest in extending DAP in 2018. More private companies are also expressing willingness to participate as the platform matures. As Niger State is not a part of PM's extension phase, it will not be involved in the continuation of DAP there, but as a system and a model, DAP will be easily replicable elsewhere in the country. It is hoped that the future growth of the platform will also better target women and include more women's cooperatives.



KEY LESSONS

- Pre-existing cooperative structures can play important roles in aggregating and meeting members' demands, but it should not be assumed that cooperative managements can provide up-to-date information on their membership; this in itself may be one of their needs.
- An electronic platform updated by agents within the cooperative is a valuable way of communicating smallholder farmer demand.
- Input providers may be unsure of farmers' ability to pay, but this successful pilot has demonstrated that cooperative members will buy the inputs that they express the greatest demand for.
- Timely knowledge of demand does not overcome problems on the supply side, such as infrastructure problems, production delays and needs for finance.



Weather data for smallholders



To strengthen farmers’ resilience to climate change, PM explored the idea of providing weather-data-derived products and services.

THE PLAN

Information is essential for adapting to the effects of climate change. Smallholder farmers have long relied on traditional weather knowledge to make decisions about when and where to plant crops but, as rainfall, growing periods and temperatures shift in response to a changing climate, this knowledge becomes less and less reliable. There is a growing need for poor farmers to have access to information, based on solid, local data, that can guide their decision-making for greater resilience.

This intervention in 2017 sought to establish the potential for weather-data-derived products and services. Focusing in Kaduna State, PM partnered with Kukua BV, a partner that has worked on deploying weather stations and gathering data in East African countries. PM sought to support Kukua BV in establishing critical infrastructure to capture and transmit weather data, and to aggregate and analyse the resulting information.

THE EXPERIENCE

A baseline farmer survey carried out before system development was very encouraging for the model envisioned by the partners. Smallholders in the pilot area clearly understood the uses and benefits of weather information services, and knew what information they needed. This input from farmers guided the fine-tuning of the final data-derived product, showing that smallholder farmers can and should be involved in all stages of developing and deploying weather-data solutions.

After this promising start, the intervention ran into problems of clearance with regulatory authorities. The government had begun to clamp down on private operators distributing weather information, and PM was not made aware of this at a time when it could have influenced the process. While the partner had to go through a lengthy process of applying for licensing – which has still not been granted – farmers in the pilot area finished planting crops and applying inputs. As these are the activities where weather information is needed, the system could not be used during the key window and the intervention was put on hold.

KEY LESSONS

- Smallholder farmers are aware of what weather information they need, and should be involved at every stage when developing products and services.
- Closer attention to the policy landscape could have saved the intervention from a regulatory bottleneck, and this should not have been left up to the partner alone.
- If roles and expectations are not clearly articulated from the beginning, and reiterated regularly with all partners involved in an intervention, the outcome of activities might be less effective at targeting an outcome.
- It is essential to regularly review an intervention, be flexible with a strategy and be open to capitalising on the activities of other actors within a space.



Rural demonstration and sale of certified maize seeds



To help extend the reach of certified maize seeds to rural smallholders, PM worked with its first partner seed company, Springfield, to raise awareness and improve access in rural communities.

THE PLAN

Like many seed companies, Springfield was selling most of its seeds in peri-urban areas, and it wanted to be able to supply more rural smallholders. To support this, PM implemented a dual-approach intervention: raising farmer awareness and creating access to Springfield's seeds in rural communities.

THE EXPERIENCE

To raise farmer awareness, lead farmers in rural communities donated parts of their fields so that demonstration plots could be established to show the viability of the certified seeds and the best practices for achieving high yields with them. To increase access to the seeds, village-based agents were employed to manage sales of the seeds alongside the demonstration plots.

PM and Springfield expanded the initial 2013 pilot the following year and, in 2015, PM encouraged Springfield to continue scaling up the model, which was working well, on its own. This successful experience of nurturing a rural input market through demonstration and village-based agents established an approach that PM went on to pursue with a number of other partners.

KEY LESSONS

- Field demonstrations managed by lead farmers are effective focal points for both education on certified seeds and sales of the seeds themselves.



Developing certified rice and maize markets



To drive the use of more productive certified rice and maize seeds, PM collaborated with leading Nigerian seed company WACOT to raise awareness of certified seeds among farmers, validate their utility using demonstration-based training and develop offtake markets.

THE PLAN

The West African Cotton Company Ltd (WACOT) is a Nigerian company active in a number of agricultural markets, including multiplication of certified rice seed. In 2014, the company was interested in developing the first open market strategy for rice seed. For this crop, farmers are accustomed to receiving seed through government subsidy initiatives that are highly politicised in their distribution and do not always deliver the highest quality, most timely or most productive seeds. While developing an open market rural sales network, WACOT asked for PM's help in driving farmer behavioural change and raising awareness of certified seeds.

In an initial pilot in the rice belt of Kebbi State, PM combined pre-planting season promotion of these seeds, through radio jingles and market storms, with direct training for farmers using demonstration plots during the growing season. These activities were co-funded with WACOT. PM also worked with WACOT, its sales coordinators and agro-retailers to design a distribution network for smallholder farmers to get access to these seeds.

THE EXPERIENCE

The pilot went very well, with WACOT selling 4,292 bags (12.5 kg each) of seeds on the open market during the season. WACOT achieved approximately three times the revenue they would have received from sales to the government, without the usual delays in payment, giving them confidence in this model. WACOT immediately scaled up distribution of both rice and maize seeds ahead of the 2015 rainy season to Kaduna, Niger, Plateau and Katsina states. While seeds were distributed through just two sales coordinators in the pilot, the scaled-up project brought in 35 of WACOT's existing retail partners across four states.

The use of existing retailers allowed for rapid scaling up; however, they were not accustomed to keeping contact records of customers. This made it difficult for PM to determine the reach of the intervention, hindering monitoring efforts. Similarly, farmers who made purchases during market storms proved difficult to reach, as they often came from far away, or even outside the states.

PM recognised that the adoption of certified seeds depended on the presence of an offtake market to make the extra yield financially beneficial for farmers; this was further reinforced by the pilot. WACOT was constructing a rice mill, but this was not finished in time to take the additional rice produced from the upscaled project. To fill the offtake gap in the meantime, PM sought other linkages. The agricultural exchange, AFEX, was one opportunity (see page 42), and PM brought this partner to meet with farmers in Kebbi and discuss grading standards, price and modes of payment. The presence of the AFEX market and its demand for high-quality rice were strong motivators for farmers to adopt certified seeds and good agronomic practices. Fifty farmers sold through AFEX at above-market prices during the pilot.

Training in good agronomic practices using demonstration plots was a successful part of PM's activities with farmers. While awareness-raising through radio, flyers and market days generated a lot of interest, the demonstrations provided an opportunity for farmers to see the seeds in action and learn about best practices to derive the greatest benefits from them. During the scale-up, 4,000 farmers participated in this training, building on the 1,733 reached during the pilot. In the following year, two rice mills, in Kano and Kebbi, saw the potential of working with these trained rice farmers, and both are now providing further offtake opportunities and organising outgrower schemes.

The scale-up season of the intervention was successful in building farmer capacity, yet a new government intervention, the Anchor Borrower Scheme, prevented a repeat of the strong seed sales WACOT achieved in the pilot. Rice and

maize seeds trucked into the states could not be sold because farmers had already received seeds through the government scheme. Prior knowledge of the government's plans could have allowed WACOT to adjust but, lacking this, sales were poor, and the intervention ended in 2015.

KEY LESSONS

- Open market sales of certified seeds are highly dependent on an offtake market for the larger harvest they generate. The presence of an offtake market can increase farmers' interest in buying seeds and should be in place early on.
- Private sector and development partners must stay informed about new or changing government policies that can seriously distort markets and impact sales.
- A marketing campaign before the planting season, followed by demonstration-based training, was a successful combination for both driving adoption of certified seeds and building farmer capacity.
- Retailers brought into an intervention need to be reliable in keeping customer contact records for effective monitoring of reach.
- Where a pilot has been successful with a capable partner, it is worth investing time and resources in designing other potential interventions with them.





Sesame outgrower programme



To solve challenges standing in the way of a successful outgrower model for sesame, PM brought outgrower sesame farmers into a closer relationship with a private-sector partner.

THE PLAN

Sesame is an important export crop in Nigeria and, as the second largest African producer of this in-demand commodity, there is potential for expansion. The large agricultural company WACOT signed an agreement with the Federal Ministry of Agriculture and Rural Development in 2014 to manage a sesame seed multiplication programme with outgrower farmer groups to provide certified seeds to the rest of the country.

Based on its existing partnership with WACOT (see page 22), PM stepped in to support the outgrower model by building capacity among farmer groups and aggregating their production in 2015. This intervention, first implemented in the Federal Capital Territory (FCT) and Katsina State, aimed to help farmers transition from seed multiplication to producing sesame for the high value market. PM also

sought to help WACOT develop its systems for managing outgrowers, as such systems have a history of encountering many problems in Nigeria.

THE EXPERIENCE

The pilot intervention in the FCT and Katsina State involved 400 men and 100 women across 20 groups. The groups were provided with seeds on credit and trained how to access inputs, loans and markets.

In one particular community in Katsina, farmers yields in 2015 were low and they were not able to repay WACOT for the seeds supplied on credit. Sesame production was new to the area, and it became apparent that rainfall was too high for the crop. An assessment of climate conditions before the intervention began would have led to better targeting of sites with the highest potential.

Following the pilot and building on lessons learned, more farmers in Katsina and Jigawa states were brought into the intervention in 2016, bringing the total to 548; PM's emphasis shifted to ensuring WACOT recovered the seed loans given to farmers. Even in areas of higher yield, WACOT had faced problems procuring sesame from the outgrowers at harvest. The company was in competition with local middlemen who had connections with farmers and moved quickly to buy their sesame with cash in hand. Thus, the problem came down to a question of trust. PM saw a need to strengthen linkages between the company and the farmers, and engaged intermediary agents, or "farmer friends", in communities to help forge relationships with the farmer groups; these agents were present during harvest and disseminated information on prevailing prices at the collection centres.

With this development, WACOT was able to recover the input loans given to farmers, addressing the outgrower model's major constraint. PM therefore ended its involvement after the second year. Realising that the model could serve

as a significant channel for its own sesame export needs, WACOT moved the intervention from its Corporate Social Responsibility Department to its Procurement Department, prioritising its growth as part of the company's commercial business strategy.

KEY LESSONS

- Trust is core to the success of the outgrower model; local intermediary agents can establish a relationship of trust between a commodity company and its outgrower farmers, enabling the company to compete with other buyers at harvest.
- Local climate conditions should be assessed thoroughly for suitability before introducing a new crop to farmers on credit.





Conservation agriculture value kit



To educate smallholders on the benefits and techniques of minimum tillage conservation agriculture, PM and Value Seeds leveraged a complete package of inputs for a 0.25-hectare plot of maize.

THE PLAN

In this intervention, PM worked with Value Seeds, a company interested in introducing a kit of high-quality inputs for conservation agriculture using minimum tillage. The company had developed the kit – a package of seeds, fertiliser, crop protection products and a postharvest preservation product. The kit was sized for a 0.25-hectare plot of maize, making it suitable for trial adoption by smallholders.

To best leverage the potential of the kit for disseminating new techniques, PM suggested pairing it with training on conservation agriculture, which is not well known in northern Nigeria. This was delivered through demonstration plots, and a training booklet in the kit on minimum tillage and mixed cropping with nitrogen-fixing bean or soybean.

THE EXPERIENCE

High rates of adoption were not achieved during the intervention, seemingly due to the labour-intensive, unfamiliar and untested nature of conservation agriculture techniques. The experience reinforced the impression that conservation agriculture, while a transformative approach to farming, needs longer time scales to achieve its huge potential impact. Value Seeds chose to carry forward the strategy developed with PM and went on to develop a rice kit on its own.

KEY LESSONS

- Conservation agriculture is an approach with high potential for northern Nigeria but, as a new and very different set of techniques are needed, time and resources should be invested in proving that the technique works, and in building adoption and impact.
- Interventions aimed at promoting conservation agriculture will require lengthy time scales in order to demonstrate its value to farmers. Demonstration and adoption should ideally be carried out sequentially rather than concurrently.
- Smallholder farmers are unlikely to be interested in investing time and resources in a new farming technique like conservation agriculture without having seen its impact.
- Conservation agriculture in Nigeria requires a lot of drudgery (because of the absence of the required machinery) and also reduces farmers' yields in the first and second years, both of which deter adoption by smallholders.
- In a thin market where there are limited options for partnerships, interested businesses are not likely to have the capacity to implement an innovative activity and may require capacity building prior to the intervention.
- Institutional structures and bureaucracy can exacerbate problems or support activities associated with project implementation.



One-Stop Shop for inputs



To explore whether it was possible to bundle inputs for smallholders rather than sell them separately, PM connected a community-based organisation interested in distributing input kits with a private agrodealer.

THE PLAN

Starting in April 2017, PM became interested in bringing together its previous work on inputs in a single channel. There are clear benefits for farmers when all the inputs they need are aggregated as a kit, much like the conservation agriculture kit developed with Value Seeds (see page 26).

THE EXPERIENCE

For this seed pilot, PM worked with a community-based organisation (CBO) interested in providing complete inputs to the 5,000 farmers it worked with. PM connected the CBO with a new, private agrodealer that wanted to start up an input warehouse; the partners planned to sell inputs – seeds, fertiliser and crop protection products – to farmers as a kit. A few of these kits were purchased through the CBO, but the organisation lacked the capital to purchase the inputs to then sell on to members, and the husband of the agrodealer disapproved of her new business venture, causing the initiative to stall.

PM is reviewing the model to learn from the experience because many input companies have expressed interest in implementing one-stop shops for their products. This could prove to be a good approach, as input companies will not face the same tight financial constraints as agrodealers or CBOs and may be able to carry out such a model more sustainably.

KEY LESSONS

- Supplying seeds, fertiliser, crop protection and other products together is beneficial for smallholders; it may be viable for input companies to set up such one-stop solutions themselves.
- When working with a CBO which has limited skills and experience as an entrepreneurial entity, it is essential to build capacities and mentor for a significant period of time.
- Choose your partners critically; taking account of all the possible influencing factors like financing and cultural norms is important.
- When an intervention which shows promise for upscaling impact fails, re-evaluating the strategy and tweaking it with lessons learned might lead to success; either in that location or elsewhere.



Crop protection: store-in-shop model



To build awareness of crop protection products and their safe and effective use, PM created a direct sales model through local retailers and arranged demonstrations to train farmers to use the products effectively and safely.

THE PLAN

In 2014, Syngenta, the multinational agrochemical and seed company, decided to abandon its previous strategy of joint ventures and to enter the Nigerian market on its own. Wanting to reach smallholder farmers with affordable crop protection products, Syngenta Nigeria Limited asked PM to help build awareness of Syngenta's products and how to use them safely and effectively.

PM suggested the concept of a store-in-shop, and fine-tuned this strategy with Syngenta. Mini-stores of crop protection products would be set up in local agricultural supply shops in parts of Kano and Katsina states. These would improve access to genuine, affordable products in outlets where farmers already shop, while also reducing transaction costs for all participants. The target products included three herbicides, a fungicide, two insecticides and a seed-dressing chemical, as well as certified rice and vegetable seeds.

PM and Syngenta also recognised that farmers would need support in using the crop protection products to reliably raise

crop productivity without harming themselves or consumers. Therefore, building on the lessons of the intervention with WACOT (see page 22), PM combined the direct retail model with training for farmers on proper use of the chemicals. Working hand-in-hand with lead farmers and using field day demonstrations, this training would cover problem identification and targeting; dosage; protective mechanisms for crops; and safe handling.

THE EXPERIENCE

Partnering retailers received the products, branding and product training for stores-in-shops. They were offered a commission from Syngenta for promotions leading to sales. The establishment of the stores proceeded well; 45 retailers took part throughout the 2015 wet season and 2015/2016 dry season. Seventy per cent of the retailers attended demonstration events to promote and sell their products.

Most of the difficulties faced were internal to the intervention partnership. Administrative procedures created bottlenecks, largely due to differences in PM's and Syngenta's accounting

systems, and Syngenta was unable to pre-finance activities late in the project. There were further issues with the availability of some imported products intended for sale in the stores-in-shops, partly due to customs delays. In one case, Syngenta promoted a product that was banned in the United Kingdom and United States, and PM had to ask the company to remove this from the list if the partnership was to continue. This request was met. Throughout the intervention, the commitment of Syngenta’s Director for Nigeria played a significant role in achieving success; however, his departure during the course of activities meant that some of this vision was lost.

Demonstrations, field days and trainings were headed by 123 lead farmers, who set up 320 demonstration plots across Kano and Katsina states. PM and Syngenta jointly organised the events, acting through a senior agronomist and four junior agronomists in each state. Regular monitoring of the intervention fed into an impact assessment at the start of 2017, which found that farmers using the crop protection products saw maize yields increase by 180% in Katsina and 72% in Kano, as well as rice yields increase by 50% in both states.

The demonstration of products for tomato crops was disrupted by an outbreak of the moth *Tuta absoluta*, which destroyed most of the tomato demonstration plots, in part because the insecticide was not available at the right time and in sufficient quantity. This reduced the confidence of some farmers in Syngenta’s products, particularly given their higher price over generic products. On the other hand, the pest outbreak did lead to strong sales of Syngenta’s insecticide at retailers.

The partnership also brought about changes in the market system that made it easier for products to reach smallholder farmers. Syngenta introduced its strongest selling insecticide in an affordable small pack, and made plans to release other similarly packaged products. Their sales channel gained reach through the introduction of regional distributors with mobile sales representatives. Two men and two women who started as lead farmers decided to move into retail and became part of this channel.

Importantly, the outcomes of this intervention came about through the inclusion of women. While this was not an original goal, PM decided to gender-disaggregate all data and prioritise women in the selection of retailers and lead farmers. They made up 30% of participants in the field force, where they were successful in reaching out to others in their homes and through women’s faith groups. The field demonstrations led by women were some of the best-managed, encouraging other women farmers to attend and interact freely.

Over its two-year duration, this intervention reached 34,221 farmers, surpassing the planned 20,000. The retailers

participating in the store-in-shop model recorded sales of over ₦12 million (£26,667), most of which was in the second season. The intervention allowed PM to demonstrate to Syngenta that the model and the market would work, and PM exited, encouraging Syngenta to take full ownership of the intervention. Syngenta subsequently developed a similar programme to continue to push their products through these channels in Katsina and Kano states.



KEY LESSONS

- The store-in-shop model was successful, but it was important that the retailers hosting these stores were dealers within the farming communities, as this reduced transaction costs for all participants – including farmers. Close connections between retailers, lead farmers and the wider community made it easy to sustain the market channels after PM’s exit.
- Affordable small packs, for example containing a sufficient amount to fill one knapsack sprayer, were the most popular with smallholders and should be considered for more crop protection products.
- Prioritising women in the selection of lead farmers and field force contributed to the total reach and success of the intervention.
- Demonstration of products was counterproductive when the products themselves were not delivered in time for effective use; farmers were left with a poor impression of their value.
- It is important to invest time and resources in in-depth discussions on administrative and financial requirements prior to a partnership, particularly where there is cost-sharing involved. In some cases, milestone-based contracts might be easier to manage than those based on fees and reimbursable costs.



Loyalty Programme pilot for crop protection



To facilitate the introduction of new crop protection products for rice and potato into the rural market, PM provided incentives and training for retailers, and demonstrated good practices to farmers.

THE PLAN

A partnership with the Nigeria-based Saro Agrosciences Limited began at the end of 2015, and was an attempt to replicate some aspects of the approach to distributing products to farmers and training them on their safe use that was working well with Syngenta (see page 28). The main difference was that Saro, while already a well-known name in crop protection products, wanted to introduce a new set of products for rice and potato farming. These were made available in small packs suitable for treating 0.5–1 hectare. Lacking experience in dispersed rural markets, Saro asked PM to help develop a sales channel and share risks.

Focusing on Kano, Plateau and Kebbi states, PM traded the store-in-shop model used with Syngenta for a loyalty programme that provided training and offered commissions

to retailers for repeat purchases of Saro's new products. As with the intervention with Syngenta, this effort to increase product availability was paired with on-site education of farmers through demonstrations led by Saro's own extension agents.

THE EXPERIENCE

During the pilot, 34 retailers were trained and 17 of these continued stocking the new products through to the conclusion of the project in June 2016. Some retailers were dropped from the pilot due to problems with timely stocking (in part due to the forex crisis), while others refused to share their records with Saro. In a previous project, a different company had asked for these records and then used them to sell directly to farmers, so the retailers were cautious about sharing information.

Meanwhile, 87 demonstration plots were set up by the extension agents. These were run well and proved effective. About 6,000 farmers were reached with training and, while this was only half the original target, the conversion rate was high: more than 33% of those reached bought one of the products. This was despite the forex crisis, which raised the prices of products by 40%. The sudden price rise and poor availability of Saro's products, especially coming at the peak of the season, left farmers with no option but to return to generic products.

In Kebbi, the intervention was side-lined by the federal government's Anchor Borrowers Scheme for rice farmers. The scheme gives farmers the opportunity to buy crop protection products on credit and make repayments after they have sold their harvest. While this greatly boosted sales of Saro's products for rice in the state, it also diverted the bulk of Saro's product supply and attention, interfering with the implementation of the loyalty programme pilot. This was the main reason why PM did not continue scaling up the model with Saro after the pilot.

During the pilot period, more than 35,000 crop protection products were sold to farmers in the three target states, for total sales of ₦35 million (£77,778). This is a significant level of sales for new products, but it must be remembered that most of these sales were in Kebbi, where the role of PM and the loyalty programme could not be distinguished from the larger Anchor Borrowers Scheme. All the same, the pilot's combination of incentives and training did provide

the necessary push to make more crop protection products available, along with the knowledge to use them. Saro has continued to sell the new products through rural retailers in all three states, as well as bringing them to other states.

KEY LESSONS

- Experienced extension agents demonstrating good crop protection practices can be highly effective in generating product acceptance.
- Timely supply of products to retailers' shelves is critical. Generic products are always on the market and farmers will return to them, even if they are not as effective, when better options are not affordable or available at the right time.
- In any loyalty scheme where rewards are based on sales, trust is necessary between sales data collectors and retailers who may be unaware of what the information is needed for. This can make verification of data provided by partners difficult.
- Large-scale government interventions like the Anchor Borrowers Scheme can produce unexpected opportunities to reach intervention goals, but not necessarily in a way that supports the sustainable continuation of the intervention itself.





Sprayer service providers



To minimise risks to human health and the environment in the application of crop protection products while ensuring that the right pesticides are applied in appropriate ways and quantities to improve farmers' yields, PM worked with CropLife Africa Middle East and its member companies to fund the creation of a group of professional sprayers trained in the safe application of agrochemicals.

THE PLAN

Early in planning its interventions with crop protection products, PM proposed to its private-sector partners that the best way to minimise risks to human health and the environment would be through a system of service provision, which would put the products in the hands of trained users. Although crop protection interventions that trained farmers were implemented (see pages 28), the idea of trained service providers remained. The success of PM's tractor service provider model (see page 10) further encouraged this approach. PM estimated that sprayers could earn an

extra ₦112,500–337,500 (£250–750) in annual income, while farmers could benefit from better productivity and a 50% saving compared with the cost of (often wastefully used) crop protection products.

The opportunity to try out this approach came in late 2016, in a pilot with CropLife Africa Middle East. This is a professional association representing international companies that manufacture pesticides and sell their products in the region. They have been introducing the spray service provider (SSP) scheme in a number of countries since 2008, including in the cocoa sector in Nigeria.

PM worked in partnership with six CropLife member companies in Kaduna, Kano and Jigawa states. Along with piloting the SSP concept, this was a chance to build a crop protection market intervention on a larger scale, working with as many manufacturers as possible through their association.

CropLife managed the recruiting and training of SSPs, while PM funded 80% of the recruiting cost and provided oversight and monitoring. Grant payments were made by PM based on targets: the numbers of farmers reached, and knapsack sprayers sold, the latter being the basic equipment used by SSPs. Field officers of CropLife's member companies monitored and coached the SSPs in the field throughout their first season of work.

THE EXPERIENCE

Across the three pilot states, 165 SSPs were trained, who then reached more than 5,000 farmers with their services. Care taken in the selection of SSPs paid off in a low attrition rate, with only 16 of the SSPs becoming inactive. Retention was also supported through regular monitoring and contact with field agents, which motivated SSPs to continue providing their services. The member companies, meanwhile, were motivated by what clearly became a viable new channel for their products. Many of the companies had an existing presence in these states and communities and were able to supply the SSPs with their products most of the time.

Hikes in the cost of products during the high demand rainy season were a challenge for farmers and for SSPs, sometimes pushing farmers back to generic products. However, this challenge is one that the CropLife model directly addresses: by working with many different manufacturers, SSPs can smooth out shortages and ensure the availability of crop protection in rural communities. Business training supports SSPs, and while they received one day of business training during the pilot, it is clear that more would be valuable. Help in forming clusters, which would enable SSPs to leverage their influence in a similar way to associations or cooperatives, would also be valuable and might also improve access to financing.

Spraying services were successfully promoted through community awareness programmes and events to create demand, stimulating great interest from farmers. The events were an opportunity to promote the importance of unadulterated products and good practices when spraying, while also bringing customers to the SSPs.

One unexpected finding was that local community sprayers, known as *masu gajeren wando*, were already operating in some areas. These service providers used a variety of products and typically no protective equipment. They were not able to compete with the new SSPs, whose professional kit made them stand out to farmers. While some existing sprayers went

out of business, others have sought training from the SSPs and have bought their own spray kits. It is hoped that in scaling up, more *masu gajeren wando* can be included.

PM plans to support the intervention in additional states in the coming years and will advise CropLife as the association reaches out to incorporate more companies in the model. Additional input companies have already expressed interest in being involved.

CropLife is also moving forward to introduce the SSP model in activities with the German development agency (GIZ), the Nigerian Ministry of Environment and other partners, a clear endorsement and sign of future crowding-in.



KEY LESSONS

- Implementation of the spray service provider model by a professional association requires buy-in from its member companies, who must invest resources and staff time for ongoing training and coaching; for this, they have to see a payoff in increased sales.
- Service providers connected with multiple companies can smooth out the seasonal product shortages and price fluctuations that farmers experience. Industry associations are a good conduit for bringing together companies for such a solution.
- Carefully selecting service spray service candidates, maintaining regular contact with field agents and offering business training all help to reduce attrition and sustain the model over time.
- Local service providers may already exist but may not be visible at the start of an intervention. These should be recognised and included in training activities, so they will not be displaced by the new spray service providers.



Acha processing and markets



To remove the barriers currently preventing the expansion of acha as a profitable and worthwhile crop PM worked with a private partner to reduce the labour involved in postharvest processing, creating new income opportunities for the poor women who grow this important smallholder crop.

THE PLAN

Acha is an important cereal crop for poor farmers, primarily women, in some northern Nigerian states. However, de-husking and winnowing the tiny grains is extremely labour-intensive; traditional processing by hand can take hours for even small quantities. Time and labour availability for this job places limits on how much grain women farmers can bring to market and has kept production of the crop from being as worthwhile or extensive as it could be.

A thorough search for alternatives in the acha value chain led PM to Pye-Ryat Foods, a company in Plateau State that

had a working model of equipment they had invented for semi-mechanised processing of the grain. Their model was designed using venture capital provided to demonstrate the technology, meaning that it was much too expensive for poor smallholders to procure. PM suggested to Pye-Ryat that they should co-invest in two facilities in major producing areas and offer processing services.

Along with introducing a significantly more efficient means of de-husking, grading, de-stoning and winnowing grain, the intervention also sought to create a new, high value, market linkage for women farmers through Pye-Ryat Foods' urban sales channels for milled grains.

THE EXPERIENCE

Starting in mid-2016, the partners brought the mechanised services to communities in Bauchi and Plateau states. To raise awareness of the facilities, PM invested in promotional activities, flyers, banners, market stalls and periodic monitoring visits to the communities. Awareness spread rapidly and, eager to forego the extreme drudgery involved in manual acha processing, farmers immediately began to use the processing facilities.

In order to also act as a buyer for the women visiting the facilities, Pye-Ryat required working capital. However, the company was reluctant to engage with banks due to high interest rates. PM decided to offer a returnable grant that allowed Pye-Ryat to stock sufficient acha for year-round sales in urban markets, while at the same time creating a credit history that would allow them to access better finance options in the future.

During the pilot, the processing facilities were also used to test two different management models in parallel. One facility operated under a profit-sharing agreement with the local manager, while the other, which was located further from Pye-Ryat, was managed independently. The operator in the latter case was not able to keep the machinery in good repair or to remit money received for processing services, which led Pye-Ryat to close the facility for some time. Given the relative success of the profit-sharing model, the company will seek to use this approach in future activities.



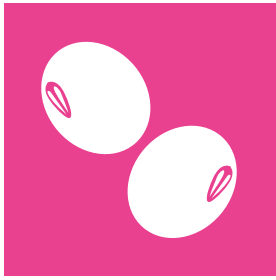
During the year-long pilot, a total of 2,406 women and 802 men made use of the processing services. The initial contract was then extended to the end of 2017, in order to reach a targeted 3,600 beneficiaries, capture more data on the acha farmers and extend the returnable grant to Pye-Ryat. The grant was particularly important at this time, as the country's foreign exchange crisis pushed up prices of imported and domestic grains alike, and the cost of acha doubled.

PM also worked with Pye-Ryat to develop a business plan and market assessment report, and to link the company with others in the growing market for "Made in Nigeria" products. As a response to demand identified in the report, Pye-Ryat have developed packaged granular and powdered acha products, and have introduced the granular product to the market.

In the regions where semi-mechanised processing is now available, women farmers appear to be increasing the area of land planted with acha, and traders are buying larger quantities of unprocessed grains to bring to these facilities. There is every reason to believe that this long-neglected Nigerian crop is finally ready to take off.

KEY LESSONS

- Where a crop is limited by high postharvest processing demands, an efficient processing service for smallholders can transform its potential.
- Interventions which involve offtake buying require adequate working capital. This can be limiting especially where access to finance is unavailable and would-be borrowers lack a credit history. In such situations, a returnable grant may be the best way to get the process moving while also establishing a credit history.
- When a processing facility introduces new technologies and markets, it is better for the creator to stay closely involved through a profit-sharing model rather than turn it over to an independent operator.
- Developing a business model which delivers benefits to both producers and service facility managers equally can make a difference to how small businesses grow and become sustainable.
- An intervention can expand and diversify from its original conception in a positive way; a strategy should be dynamic enough to respond to opportunities.



Establishing a better supply chain for oil seed processors



To help meet a soybean processor's demands and increase the incomes of rural smallholders, PM trained and supported field officers who helped smallholders improve their soybean yields, and brought in existing partners who could supply high-quality inputs.

THE PLAN

Soybean is grown as a smallholder cash crop in northern Nigeria. The market price is presently high, thanks in a large part to demand from the poultry industry. In 2015, ABJ Oil, a processor, fell far short of its production capacity due to a lack of soybean supplies. As smallholder yields are very low in many northern states, PM opted to address this supply shortage by linking ABJ with groups of soybean farmers, while also linking the farmers with quality seeds, crop protection products and training to help them raise yields to fulfil the buyer's demand.

ABJ Oil agreed to incorporate field officers, trained and supported by PM. These officers would identify clusters of soybean farmers; establish demonstrations with lead farmers on good agronomic practices for soybean production; and provide information on accessing and using inputs. In the longer term, ABJ planned to collaborate with specific farmer groups, including women's groups, to cultivate its high-quality seeds and ensure future scalability. As a final link in the chain, PM would establish a relationship between ABJ and the agricultural exchange AFEX (see page 36). Through this, farmers would have the option of selling their harvest to AFEX,

who would take care of aggregation and initial processing before selling the product on to ABJ.

THE EXPERIENCE

In an initial scoping study, PM identified four areas with high potential for soybean in Katsina, Kaduna, Kano and Zamfara states. Five field officers (three men and two women) were trained on PM's demonstration protocol, and the agents themselves found locations for 30 demonstration plots. Of these, 14 were established with women as lead farmers.

PM brought in existing partners to provide inputs – Value Seeds (see page 26) for high-quality soybean seeds and Syngenta (see page 28) for crop protection products. These partners also participated in good agronomic practices (GAP) training and a series of well-attended field days. The envisioned deal with AFEX was not established in time to play a role in the intervention, however, and this relationship remains to be developed.

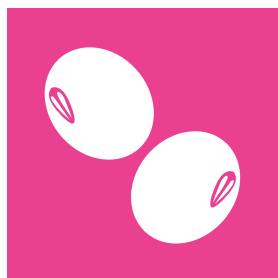
In all, the GAP training reached nearly 8,000 women and 4,500 men. The results were very good; the use of inputs increased average yields of participating smallholders from 1.2 MT

per hectare to 2 MT, roughly the national average. Farmers stood to earn a net profit margin of 58.3% for every 100 kg of soybean sold. However, ABJ Oil did not achieve the level of offtake they planned for. PM continues to work with ABJ for more effective aggregation, facilitating market linkages with more farmer groups and following up on the planned relationship with AFEX.

KEY LESSONS

- Increasing smallholder soybean farmers' use of quality seeds, crop protection products and good agronomic practices immediately raises yields and allows them to profit from the present high demand.
- A processor with high capacity and a strong need for a smallholder product is still likely to require support with farmer linkages and aggregation in order to effectively fill this need.





Supporting livelihoods in Niger State



To contribute to the growth of the soybean sub-sector, PM partnered with Voluntary Service Overseas (VSO) to facilitate the supply of inputs, training and mechanisation services for smallholders to increase their yields and secured an agreement with a ready buyer for farmers' soybean production.

THE PLAN

VSO is a leading development organisation that works through volunteers to fight poverty in developing countries. The organisation has a great deal of experience in setting up and training producer groups to help poor farmers upgrade their production and livelihoods. In Niger State, VSO found that large numbers of smallholders were growing soybean to sell, but as in other northern states, very low yields and lack of market access kept them in poverty.

VSO had not worked with soybean in Nigeria before, and thus sought PM's help in mobilising the private sector and developing market linkages for the farmer groups they were training. Fortunately, PM was in contact with Flour Mills Nigeria Ltd, a very large processor that is also one of the country's major soybean buyers. Flour Mills had never attempted to make purchases in Niger State, and was unsure of the farmers' ability to deliver, but agreed to be involved in the pilot for 2016, under a tripartite agreement with PM and VSO.

While developing this linkage was important, PM found that the farmers also needed to fill gaps on the production side to make the most of it. They faced many of the same yield

constraints seen in the earlier soybean intervention with ABJ Oil (see page 36). Therefore, in addition to market access, PM got involved with three other elements of the pilot aimed at building capacity among farmer groups: disseminating/sharing good agronomic practices; providing access to inputs (seeds, phosphate fertilisers and crop protection products); and introducing labour-saving devices for faster threshing.

THE EXPERIENCE

In the initial scoping phase, farmer groups across eight local government areas (LGAs) in the state were reached through VSO and, if interested, were enlisted in the pilot with the help of appropriate incentives. PM also carried out a survey to estimate the total number of soybean farmers in these areas and the quantity of soybean that might eventually be aggregated for Flour Mills.

Once the pilot was set up, VSO recruited field officers to act as extension agents. PM trained the recruits to run field demonstrations, which was a new methodology for VSO. The partners chose input suppliers to link with the participating farmers, and also connected them with the mechanisation service provider, the Tractor Owners and Hiring Facilities

Association of Nigeria (TOHFAN), which had been furnished with threshing machinery by PM (see page 10). This machinery drastically cuts the time spent threshing a hectare of soybean to eight hours compared to up to nine days, depending on labour availability, for manual threshing using simple iron drums. TOHFAN established five threshing centres.

However, the threshing machines ran into problems with maintenance and breakdown, as documented under the mechanisation intervention. This meant the machines were not available most of the time, and even when available they were difficult to move between farms. The problems in deployment, which were primarily due to the fragmented nature of participating farmers' lands and the consequent increase in transportation costs, meant that farmers were kept waiting for weeks and that many eventually went ahead using their usual threshing methods.

As the first harvest approached, the farmers attended periodic marketing meetings with Flour Mills to ensure they would deliver. The buyer was supported to develop a protocol for the LGAs that covered pricing, warehousing and payment. Within a two-month period, the groups aggregated and supplied more than 120 trucks of soybean (some 3,500 MT) to Flour Mills. The sale price was over 10% higher than in the previous year, representing the best price available in Nigeria in 2016.

Assessment of the pilot showed that over 2,500 farmers who attended trainings at demonstration plots had benefited from better yields. Using the techniques introduced, farmers saw on average 50% larger yields in just the first year of investment.

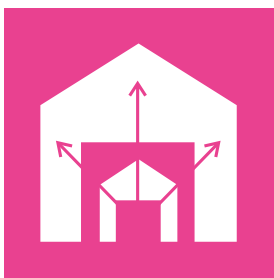
This success led to a scale-up campaign that began in 2017 and is ongoing. Partners decided to introduce maize into the training, as VSO noted that many of their farmers planted maize as an early crop before the relatively late soybean season. This rotation is especially popular because the nitrogen-fixing qualities of soybean enrich the soil for the next maize crop. The other new idea introduced in scaling up was to move away from working with chosen input companies towards a model of input application service providers (IASPs). This was inspired by the ongoing sprayer service provider (SSP) partnership with CropLife (see page 32); the SSP model was expanded to deliver certified seeds and fertilisers in addition to crop protection products. CropLife itself provided examples of how this has been done in Asia. IASPs were selected from within communities, trained and given grants for spraying equipment. Monitoring of this network showed that IASPs have been successful as a sales channel; the majority of farmers opted to buy inputs from IASPs directly rather than pay for IASPs to apply them.

Motivated by the success of the pilot and the continuing scale-up, Flour Mills is now building a warehouse in Kotangora, Niger

State, for easier aggregation and offtake. Having established a line of procurement in the state for the first time, they have become more willing to be directly involved in improving the quality of smallholder soybean production, though they still have doubts about the quantity that the state's farmers can produce in a season. But, with new demand driving a more competitive market, more farmers are already planting soybean for Flour Mills' offtake. VSO, with their capacity built by PM, will continue to provide training for these farmers in Niger State through 2019.

KEY LESSONS

- Large buyers who have doubts about smallholders' capacity can be quickly convinced by successful delivery, and are willing to invest further.
- Farmers are very interested in employing labour-saving devices at harvest, but these have to be tested extensively beforehand to ensure that they are reliable; if there are delays, the harvest cannot wait.
- Support for potential cash crops should be extended alongside support for other crops in the farming system, as was done with soybean and maize in the scale-up.
- Community-based service providers can bridge the gap between input suppliers and farmers in their local area. Farmers may be more interested in buying products from them rather than employing their services to apply products.
- With service provision, choosing trainees who are interested in and able to manage a new line of business is important to reduce/eliminate significant drop-out.
- When two non-governmental organisations with two different approaches collaborate, it is important to outline and agree on a way to merge both organisations' contracting and implementation policies, otherwise there can be significant delays and tension along the way.
- Working with large private-sector multinationals can cause significant delays with contracting and execution because of numerous bureaucratic hurdles.
- In any agricultural initiative and intervention timing is paramount; adequate lead time is necessary to ensure the provision of necessary inputs in advance of need.



Bringing an innovative farmer-franchise model to scale



To support a young agricultural franchise aiming to boost the incomes of thousands of new members, PM purchased a series of bonds that provided working capital for the franchise while also catalysing financing from other investors.

THE PLAN

Babban Gona is a young, rapidly growing agricultural franchise that engages enterprising smallholder farmers and organises them into cooperatives known as trust groups. Groups receive training and inputs on credit to establish high-productivity farming and marketing services for their products. Babban Gona began in 2012 with 100 farmers and has set a highly ambitious target of 1 million smallholder members by 2025.

The franchise's innovative model hinges on providing members with seeds, fertilisers and other high-return inputs on credit – contributions totalling ₦80,000 (£178) per member. The model depends on working capital, yet without a substantial credit history, Babban Gona was unable to access the capital it needed to scale up as rapidly as it wished.

Seeking help to take a first step on the ladder, it approached PM to be its first institutional investor, proposing the issuance of a bond. PM accepted this idea and purchased a ₦72 million bond (£160,000) in 2013. Leveraged to scale up Babban Gona's membership and impact across northern Nigeria, this instrument was dubbed a Raise Out of Poverty (ROPO) bond.

THE EXPERIENCE

While an unorthodox move for an M4P project, the bond was an ideal opportunity to catalyse a pro-poor model that aligned with PM's vision for northern Nigerian smallholders. Due diligence and close monitoring of the bond's use assured PM that early support for Babban Gona was paying off. The bond allowed the franchise to scale up membership tenfold during its two-year duration.

In 2014, while this bond was still ongoing, PM decided to invest in a second ROPO bond of ₦40 million (£88,889). The second bond was specifically to support the involvement of more women in the model. Babban Gona used it to finance new lines of rice, soybean and cowpea, crops that prospective women members had particular interest in. The franchise wanted to reach more women, including the wives of existing members, but experimenting with these new crops was deemed too risky to undertake with commercial capital. After testing the waters with this second bond, Babban Gona chose to continue scaling up rice as one of its main crops, pursuing a more gender-balanced future.

The original ROPO bond was fully paid off in 2015, and PM chose to re-invest the repayment – along with the interest collected – in a third bond. By 2017, Babban Gona comprised

4,200 trust groups of more than 18,000 farmers, productively cultivating over 14,000 hectares. The maize farmers were achieving yields of more than double the national average, and much of their harvest was being stored in high-quality warehouses to be sold at the most opportune time. With these benefits, farmers increased their incomes by more than 150%.

The model's success was not solely due to the bonds purchased by PM, but these provided the key signal that showed other investors that organising smallholder farmers could be profitable. In the four years of PM's investments, larger investors, including the Bill & Melinda Gates Foundation, Kiva and First City Monument Bank, came on board. PM's early support catalysed some ₦9.9 billion (£22 million), and counting, of equity and grants from investors.



KEY LESSONS

- A combination of farmer education, inputs on credit and warehousing services can be a potent model for bringing farmers in northern Nigeria out of poverty.
- The Babban Gona model has the potential to scale very rapidly, if the high capital requirements can be met.
- Despite being outside the bounds of a traditional M4P approach, direct catalytic investment – through the purchase of social impact bonds – in the right initiative at the right time (not too early, but as soon as significant traction is seen) can open the door to additional investments which will empower poor farmers. The amount invested needs to be enough to effect change.
- Crops that are widely grown by women should be specifically targeted in franchise models; this may require special investment mechanisms that commercial lenders may not offer at first.
- Access to finance is a common challenge across the agricultural sector; sometimes risks need to be taken by traditional investors and potential development partners to achieve results.



From warehouse storage to commodity exchange



To reduce postharvest losses of farm products and allow farmers store their grains until prices are at their peak, PM worked with AFEX Commodity Exchange Ltd to issue electronic warehouse receipts to farmers; the intervention quickly evolved into a broader collaboration to meet farmers' needs at harvest and planting times.

THE PLAN

PM's involvement with AFEX Commodity Exchange Ltd was born out of a motivation to reduce production losses that smallholder farmers experience after harvest – an enormous waste that can be addressed with better storage facilities. AFEX is a private company that is building a certified warehousing system that offers farmers a chance to safely store their harvest for a small fee, and later, when prices are favourable, sell it to end-users through the exchange.

In 2015, PM and AFEX piloted an electronic warehouse receipt system in Kaduna State and, in 2016, scaled up the system to eight other states. The system enables farmers who store their grain in AFEX warehouses to use their warehouse receipts as collateral for loans, offering them a new route to accessing finance.

THE EXPERIENCE

As a commodity exchange, AFEX's business was primarily facilitating sales not warehousing. Storing grain was also not a priority for farmers, who, despite the incentive of electronic receipts, were more interested in spot selling at a good price. In most cases, smallholders simply did not produce enough grain to require storage. This was particularly so for women farmers, who also struggled to access information on warehouse services. As uptake of the receipt system was poor, PM progressively shifted the focus to the needs of the farmers – what would help them produce more, and thus have more to store?

The breakthrough proved to be in leveraging AFEX's network to furnish farmers with inputs, and especially quality-assured fertilisers. PM connected AFEX with a fertiliser supplier, and

the exchange established a fertiliser swap programme, through which farmers could trade bags of maize for bags of fertiliser at a better than usual rate. In addition, LAPO Microfinance Bank (an off-shoot of the Lift Above Poverty Organisation) and the Development Exchange Center, two partners brought in by PM, began to provide individual farmers with financing to buy the fertiliser they required. In 2017, three input companies were brought into the arrangement with LAPO – OCP Africa, DuPont Pioneer and Bayer – who together provided farmers in parts of Kaduna State with a bundled input loan of fertilisers, maize seeds and crop protection products.

These multiple forms of support for accessing finance and inputs effectively served the same purpose for which the receipts system was envisioned. At the same time, the market access provided by AFEX became highly valuable to the farmers engaged in selling. This was particularly true as AFEX gained access to working capital through a bond issued to PM. After three successful investments in Babban Gona (see page 38), PM purchased a fourth Raise Out of Poverty bond, which provided AFEX with ₦110 million (£244,444) in capital for its settlement fund. This fund allowed AFEX to engage in significantly more spot sales with farmers during the harvest season. AFEX offers better prices than most other rural buyers, as well as more precise weight-based purchasing – and now immediate payment, as well.

KEY LESSONS

- While storage is an important consideration to address smallholder postharvest losses, quick aggregation and sale is more valued by farmers with low levels of production.
- Storage only becomes important when production increases.
- Warehouse receipts are just one mechanism for farmers to finance their seasonal needs for inputs. It is important to focus on what those needs are and what kinds of partners can meet them at the right time, and to be more flexible in intervention mechanisms.
- A commodity exchange can be a powerful network through which to reach farmers, particularly when it is well connected with gatekeepers in rural communities and operates with a high level of trust and readily available working capital.





Linking rural women to the international shea market



To boost participation and benefits for Nigeria and its shea nut producers in the active global shea market, PM partnered with procurers and processors to establish and test value-chain linkages.

THE PLAN

Shea trees only grow in West Africa, and Nigeria is home to more than half of these. The nuts of the trees, processed into shea butter, have culinary uses in Africa and are increasingly sought after by the global cosmetics industry. Where the trees are found in northern Nigeria, harvesting and selling the nuts is a small-scale activity for many poor women. But despite containing most of the world's shea trees, Nigeria is not the hub of the shea industry that it could be; most shea is marketed through informal cross-border trade.

Driven by the high rate of women's involvement in shea, PM conducted a market scoping exercise to understand the shea value chain. The aim was to identify actors who could improve aggregation, processing and export in order to link the women who pick shea nuts with high value regional and global markets.

The first partner that PM chose to work with, SALID Agriculture Nigeria Ltd., was a company that procured shea and which was planning to invest in a processing plant. PM sought to help the company build a supply chain for high-quality nuts by establishing relationships with women at the farm gate.

THE EXPERIENCE

Throughout 2015, PM worked with the procurer to recruit agents and conduct quality trainings for women on picking, storing and pre-processing shea nuts. A sale of 500 MT of nuts was made to a processor in Togo, which then ordered 5,000 MT for the following year. However, 2016 brought the forex crisis and the procurer could not pay for the equipment it had ordered to establish its processing plant. With trading capital also lacking, the shea harvesting season came and went, and the first attempt at an intervention stalled.

Knowing that the market could not be developed by a single partner, PM had identified other potential value-chain actors in the scoping activities; this meant that PM was able to start a new attempt with a second company, Karite Oil Nigeria Ltd. Unlike the first partner, this processor already had a plant, but lacked experience as a trader. To meet the processor's requirement for a substantial, regular supply of shea nuts, PM again trained procurement officers and continued building the capacity of harvesters at the farm level. Procuring well picked, properly stored nuts was important because the plant aimed to produce shea butter for export. PM helped with documentation and the processor secured a contract to supply 300 MT of shea butter to a company in the Netherlands.

It was apparent that the biggest need with Karite, as with SALID, was for working capital for trading. The investor who provided the second company with finance for building its processing plant was not able to provide working capital as well. PM was able to find a lender to provide some working capital in the first season, which allowed the value-chain linkages to be established and tested, and the processor to export the first batch of the consignment.

The second year of this partnership focused on expanding access to finance, but again problems began to arise. The company was in more financial trouble than it had disclosed, including with the lease on its processing plant. Eventually the plant was closed down under a court injunction. Again, procurement could not happen in time for the harvesting season.

Activities around shea did not end there, but some of the focus shifted from working with buyers to empowering women's community-based organisations (see page 44). At the same time, PM's first two partnerships have potentially sparked changes in the overall market. At least one major company in Ghana, the regional centre of shea processing, is thinking of shifting to Nigeria. A longstanding lack of trust in Nigerian suppliers has been relieved by the satisfying, if short-lived, operations of PM's partners.

Trust in Nigerian suppliers can be sustained with further efforts; there is, after all, enough shea in Nigeria to supply the market. The questions are still how to bring shea to market and how to ensure it meets quality standards. PM will continue to pursue answers to these questions, while continuing to train aggregators and facilitate access to finance. It has become clear that it will take time for the shea value chain to catch up with the larger international market, but patience is worthwhile, given the direct and major impacts this would have on poor women with few other income sources.



KEY LESSONS

- The shea sector is showing signs of change in Nigeria, but it is not yet a high-growth industry, and still depends on new entrepreneurs and patient investors.
- When targeting gender-focused interventions, it is essential to strike a balance between the commercial potential of an intervention and its social impact.
- Processors require significant working capital to purchase shea during the harvesting season.
- Along with finance, companies wishing to link with shea harvesters in northern Nigeria need strong networks for aggregation, and the means to train women on quality requirements.
- Where export markets lack trust in a country's production, successful pilots can inspire renewed interest.
- While women-focused markets have the potential to deliver high impact, they also require more investment in capital, capacity building and mentorship, not just with women beneficiaries but with business partners as well.
- Export-oriented value chains tend to require high standards in terms of operations and quality. Many small businesses are not set up to meet these requirements or regularly supply large quantities, which can deplete the interest of international businesses.



Commercialising community-based organisations



To build commercialisation capacity in women farmer organisations, PM provided training to enhance the skills needed to conduct business along the full length of value chains.

THE PLAN

PM explored novel markets in which women were the most active in its effort to integrate more women in agriculture value chains. Another strategy which it devised was working with women-focused community-based organisations (CBOs). These CBOs ensure that women drive the supply of products (mostly agricultural commodities), and also strengthen their capacity to commercialise other products that might be profitable. Therefore, rather than being an intervention for a particular value chain, this intervention would help groups to become adaptable market players, aggregating in-demand crops from their members and sourcing inputs for their use.

Women farmers already make decisions about what to grow based on market demand but, in areas of limited market access, much of the profit ends up going to middlemen who offer them cut-rate prices. PM believed that the CBOs

operating in nearly every community would be well placed to get a better deal for women, if they could be supported to act as commercial service providers.

In order to find the organisations with the greatest reach among rural women, PM began surveying northern Nigeria's CBO landscape in 2015. Out of 20 organisations assessed, PM decided to try working with two: the Nigeria-wide Quintessential Business Women's Association, and Kaduna State's Fantsuam Foundation.

THE EXPERIENCE

In Kaduna, Niger and Kwara states, PM trained the CBOs to enhance their skills along the length of the value chain, from business planning to aggregating, negotiating trading agreements and sourcing inputs at a discount. Both CBOs made successful sales in the first year, delivering shea, maize

and soybean to large private buyers that included Flour Mills of Nigeria (see page 38) and Ladgroup. At PM's request, AFEX (see page 42) provided the groups with pre-financing to procure maize and soybean from their members with immediate payment. Between the two organisations, 2,296 women profited from these sales.

Following an evaluation, PM decided to continue with Quintessential as it operates on a very large scale and has 80,000 members in the north. It was also observed that Fantsuam Foundation had a smaller proportion of women in its membership than PM believed at first, while Quintessential had an entirely female membership.

By mid-2017, Quintessential had brokered the sale of 200 tonnes of shea nut to a major buyer, which was insufficient as the buyer had asked for much more. At the same time, Quintessential and PM were encountering the realities of trading in Nigeria, where payments often are not made according to plan. Some buyers delayed payment for months, keeping the CBO short of funds at a time when it needed to source more goods from members. To help fill the financial gaps, PM provided a returnable grant of ₦9 million (£20,000). Repayment is ongoing, with 66% of it repaid, and has the long-term benefit of helping Quintessential establish a history of borrowing.



The challenges of rural access and transport can delay aggregation by weeks. In one case, an estimated 16 tonnes of shea nut was lost or stolen from warehouses. In another case, a consignment of dried ginger grown by Quintessential members and sold to AFEX was improperly stored and went mouldy. Lastly, plans for the CBO to provide fertiliser to members at a discount, hampered by the lack of capital, did not come to fruition during the pilot.

Yet despite these upsets, Quintessential was able to make a 15% profit on its first ₦46 million (£102,222) in trades, with the benefits going to 3,548 women farmers. Having proven its commercialisation model, negotiating skills and responsiveness to quality demands, as well as learning from its experiences, the CBO is set to continue on the path of linking its members with profitable markets, wherever it finds them. In addition, a number of Quintessential coordinators have decided to start up their own CBOs to aggregate agricultural produce along similar lines, demonstrating early crowding-in around this compelling route to direct market access for women smallholder farmers.

KEY LESSONS

- There are not many women-focused CBOs in northern Nigeria that have the capacity and drive to change from working like a cooperative to working along commercial lines. CBOs that want to encourage their members to take a more commercial role need strong leadership, business capacity and drive to pursue this challenge.
- Contracts with buyers should set out the implications for late payment; larger buyers with known access to liquidity are preferable.
- Even when contracts are firm, delays need to be expected – both in payment and in aggregating and delivering goods – and planned for as a fact of business.
- With the right support, particularly access to finance on soft terms, community-based organisations can make a profit even in the first year of conducting business.
- Whereas CBOs, like many other actors in the agriculture sector need finance, returnable grants to fledgling CBOs can be unsuccessful and can put pressure on CBOs before they are ready.



Parboiling rice as a business



To build capacity among semi-organised groups of women parboilers, PM provided training that would enable these women to expand their businesses and linked these women's groups to rice traders.

THE PLAN

Partially boiling (parboiling) paddy rice before it is milled makes the de-husking process more efficient and produces better, more nutritious rice. This value-adding activity is also a vital micro-enterprise for poor women in rural Nigeria; they buy paddy rice in markets and parboil it at home for onward sale. Women can enter this business easily, but the income it provides is limited by several issues: their ability to negotiate with (mostly male) traders; their mobility away from home; and financial resources and management knowledge to grow their enterprises.

With its approach of empowering women in the rural businesses where they are most active (see page 48), PM identified rice parboiling as a promising area for intervention in northern Nigeria. The strategy for the intervention grew out of discussions with value-chain stakeholders in Kano and Jigawa states and a Kano-based NGO, Isa Wali Empowerment Initiative. In these states PM identified 22 rice traders who were interested in linking up with semi-organised parboiling groups formed by women. Starting in 2015, PM and Isa Wali began organising 39 of these groups and building their capacity in leadership, negotiation, business management and record-keeping. Local CBOs provided direct monitoring support and

helped the women record business transactions. In the 2015 pilot, PM offered incentive payments to rice traders to ensure they would follow through on their interest in trading with the groups.

THE EXPERIENCE

Identifying rice parboilers, forming groups and training were successful; 90 group managers received leadership training through a combination of participatory group discussions, experience sharing and role play. The group leaders and supporting CBOs then provided step-down training to more than 2,500 women involved in rice parboiling. By the end of 2017, more than 4,000 women had participated, processing thousands of tonnes of rice. They sold some ₦735 million (£1.6 million) worth of rice after parboiling and milling, and earned another ₦13 million (£28,888) in fees by providing their services directly to traders.

At the conclusion of the pilot – with its focus on market facilitation and capacity building – the intervention shifted towards the other significant need expressed by nearly all of the parboilers: access to finance. As the parboiling groups flourished, those with working capital were able to purchase more rice and expand their activities quickly. Most lacked such capital, however. In the intervention's second phase, PM began facilitating loans for group members through two microfinance banks. From a sample of the thousands of women who have so far received loans

to buy rice, PM recorded a repayment rate of 100%, with 92% of the women reporting that they were able to process an additional 1–2 bags of rice with the funds. Most of the women could have made use of larger loans and PM is seeking more lenders willing to engage with such a reliable pool of borrowers.

However, PM was not able to scale up the intervention according to its original capacity building strategy, as the activities proved very costly and no other partners were willing to invest in supporting them. Given how fundamental the training was to the pilot's success and the sustainability of the groups it established, PM is actively encouraging others to copy the model and its focus on capacity building. On top of the quantifiable profits earned by women, a qualitative impact assessment also revealed that the training boosted their confidence, negotiating skills and leadership capability. Groups were meeting and negotiating with male traders, organising support for their poorer members and using record-keeping to determine profit margins. The continuing levels of activity, driven entirely by the energy of members, should encourage the approach of engaging and empowering women in the activities they already claim as their own.

KEY LESSONS

- Women's economic engagement in value-adding activities can be easily transformed by first identifying the micro-enterprises that are important to women and the semi-organised groups that form around them, and then by building women's capacity to negotiate and expand.
- Early investment in training women's groups in business skills, leadership and negotiation is a necessary aspect of ensuring sustained empowerment, but commercial partners are not likely to take an interest in supporting it.
- Microfinance institutions should be encouraged to support women's organised economic activities, such as rice parboiling, based on these borrowers very high rates of repayment.
- The idea that it is difficult to reach women in northern Nigeria is somewhat obsolete. If new approaches to operating familiar businesses are presented and proven in ways that fit cultural and religious norms, many women will join in, take ownership of their activities and turn them into profitable micro-enterprises.





Clean cook stoves and alternative fuel



To reduce the environmental impacts associated with one of its interventions, PM partnered with a manufacturer to replace traditional tripod firewood-fuelled cookstoves with improved firewood-fuelled clean cookstoves.

THE PLAN

The rice parboiling intervention (see page 48), driven as it was by poor women in rural communities in Kano and Jigawa states, built larger business opportunities from a very basic technical base: rice pots boiling over traditional tripod firewood-fuelled cookstoves. PM's environmental assessment of its interventions pinpointed this as a negative impact, as it places additional pressure on already unsustainable firewood supplies – contributing to desertification in the north – and increases emissions of greenhouse gases and health-damaging smoke.

In search of alternatives, PM found a Nigerian company interested in producing improved clean cook stoves. Their

simple but efficient design requires much less fuel and produces less smoke. Assessing the stoves as an inexpensive and effective technology, PM sought to introduce them to the parboiling groups, both to reduce the environmental impacts of that intervention and hopefully to instigate wider adoption of the stoves.

The promise of this technology for the parboiling groups was further enhanced by a proposal from the partner company to convert the rice husks left over from milling into briquettes to fuel the stoves. This would work through a buy-back arrangement with the parboilers, who had been simply discarding the husks. Success would depend on the fabrication of a machine to compact dry husks into solid fuel briquettes.

THE EXPERIENCE

The introduction of the cook stoves began in late 2016 with demonstrations hosted by the parboiling groups. Group members were immediately enthusiastic about the stoves and expressed interest in purchasing them – though chiefly the standard household-size stoves, rather than the institutional-size stoves that PM had originally envisioned for parboilers. Their interest was in the health benefits of the cleaner stoves and the potential cost savings; in particular from trading waste rice husks for solid fuel briquettes rather than paying for fuel in cash.

While some of the groups began adopting the stoves for parboiling, problems on the production side hampered scaling up. The partner reached the limits of its capacity to produce and market stoves, and was unable to identify its preferred role in the value chain, attempting to play the parts of producer, wholesaler, retailer and marketer all at once. The briquetting equipment turned out to be even more difficult; what seemed like a straightforward design that could be easily fabricated resulted in machinery that functioned very poorly.

This slowed the progress of the whole intervention, and the partners came to realise that a less automated solution using a human-powered press would likely have been more successful. The company has now acquired equipment for this and is testing it for future scaling up. The lack of progress on briquetting slowed down the intervention, as it was a critical part of the intervention business model.

After this first attempt the intervention was left to cool, and it took a new team leader with a personal interest in the idea to re-ignite it. The new team leader wished to take a second look at the intervention, as he had worked on cook stoves while involved in prior projects. A re-examination of the intervention's business model, coupled with site visits and further meetings with the intervention partner, offered new insight and pointed to a fresh direction the intervention needed to take to ensure progress. This led to a focus on fabrication and sales (via new distribution channels) of the cook stoves.

Meanwhile, PM is focusing its exit strategy on incentivising the stocking and sale of the stoves by household energy wholesalers and retailers. Achieving this will ensure that the manufacturing company can continue increasing its production to make the stoves available to the parboiling groups as well as anyone else who is interested in their advantages.



KEY LESSONS

- Partnerships with manufacturing partners must be based on a correct understanding of their capacities and capabilities, and also of the roles that they define for themselves.
- For an intervention based on an untested technology, the most basic form – such as manual machinery instead of automated – is often the best place to start the learning and development process.
- When a pilot intervention has not been successful the first time around, reengineering the strategy and possibly changing partners and locations can positively transform the outcome of an intervention.
- Where interventions have not been successful before and have been exited, revisiting those interventions months/years down the line can present new possibilities as a result of changes within an organisation or other influencing external factors.
- The manager for any intervention should be a strong advocate for an intervention to ensure senior team buy-in.
- When partnering with small businesses, the vision and passion of the leadership can make a difference.



Promoting soap and handwashing



To induce positive handwashing behaviour in rural households, PM partnered with a soap manufacturer to advertise and supply their soap products to poor rural households within a broader educational campaign promoting the health and productivity benefits of handwashing with soap.

THE PLAN

The soap and handwashing intervention, which began at the start of PM in 2012, was the only public health intervention in the programme, yet it fitted precisely in the M4P approach. The intervention was based on the idea that education to promote handwashing using soap, coupled with direct-to-retail distribution of soap by a private manufacturer, would induce positive handwashing behaviour in rural households. PM thus sought to work with a company interested in adopting an educational approach to marketing its brand of soap while also promoting the health and productivity benefits of handwashing to poor households.

THE EXPERIENCE

Early in 2012, the PM team was introduced to PZ Cussons, a Nigerian soap manufacturer with high levels of brand

recognition and infrastructure. This potential partner did not initially believe that consumers in the rural north could afford its products. PM was able to convince it by conducting a small marketing test, using one of the company's products – an antibacterial soap – that had been performing badly in urban markets. Rural customers showed interest in the antibacterial soap when provided with health information on the benefits of handwashing. An agreement was signed to conduct a three-month pilot in Kano State.

In developing promotional materials for the campaign, PM took a large role as PZ Cussons was only used to marketing to urban customers, whereas PM staff were experienced in developing posters, leaflets and radio jingles tailored to a northern rural audience. Once the pilot began, the company also proved less than driven to distribute its products to rural shops. Despite the emphasis on direct-to-retail distribution in this intervention, PZ Cussons

continued to expect that distributors would do this job for it. To demonstrate the envisioned model, PM purchased soap directly from the Kano warehouse and delivered it to rural retailers, demonstrating to the company that sales improve with direct, regular supplies.

With these efforts, and particularly once PM presented the pilot results in 2013, the company's commitment seemed assured. In the three-month pilot 6,768 bars of soap were sold and the handwashing message reached about 1,354 households buying the soap. The manufacturer increased sales from the Kano warehouse by 48% and achieved a 30% return on investment. This led to a decision to scale up to four additional states, and to incorporate soap and handwashing marketing activities in the company's main marketing budget.

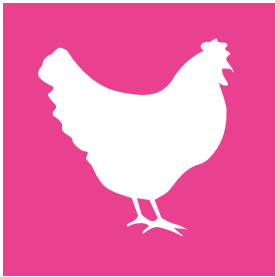
Nevertheless, the intervention ended abruptly during the first phase of the scale-up, before the partner could sign a grant agreement for cost-sharing marketing activities. The immediate reason for this was the departure of the Sales Director, who had been the intervention's champion and point of contact in PZ Cussons. Approvals were put on hold during the transition and PM was never able to re-establish the relationship.

PM made efforts along the way, and in subsequent years, to engage other partners both in the private and public sectors. Discussions with the multinational giant Unilever were held, but PM was unable to proceed without signing a strict exclusivity agreement with the company. PM also sought participation from the London School of Hygiene and Tropical Medicine, an authority on handwashing, but the researchers had already signed an agreement with Unilever and were bound by confidentiality – though they did provide useful guidance during the scale-up planning. Other as yet unsuccessful attempts have been made to involve primary healthcare management boards in Kano and Kaduna; UNICEF, which was also working on hygiene promotion in the country; and the UK-funded Maternal, Newborn and Child Health Programme (MNCH2). It is likely that involving health-oriented, non-commercial actors – such as public–private partnerships – would be a better future approach to spreading education on handwashing rather than through manufacturers, with their limited, sales-oriented interests.

KEY LESSONS

- A single champion inside a company can make a partnership possible, but activities that engage and secure buy-in from others in upper and middle management are necessary to secure a stable relationship that is less vulnerable to breaking down if the champion departs.
- Whereas working with large companies has benefits such as the technical and financial capacity to invest in worthwhile interventions, the complexities of navigating the diverse structures of such organisations can adversely affect the success of interventions.
- It is important to understand and strategically build an intervention around a private partner's medium and long-term interests. If an initiative is simply an opportunity for an underperforming product, then once sales turn around, the company may lose interest.
- The public sector is often best placed to lead in health and hygiene interventions, even with an M4P approach, as they are the partners who will persist in focusing on public health objectives.
- Monitoring health behavioural outcomes is a challenge that needs to be considered from the start, and needs to capture impacts beyond the sale of a single branded product; for example, by including all soap purchases.





Grassroots delivery for a poultry vaccine



To make Newcastle disease vaccine accessible to rural smallholder poultry farmers, PM facilitated the development of a network of value-chain stakeholders, from distributors of veterinary products to community-based organisations, which recruited and trained locally-based vaccinators.

THE PLAN

Looking for pathways to address the almost complete lack of access to animal health support in much of northern Nigeria, PM has concentrated right from the beginning on indigenous, local or “village” chickens – backyard poultry that are kept in small numbers by almost every household, and most often raised by women. It was clear that chickens were the characteristic livestock assets of the poorest, and it was equally clear that rearing poultry faced one overwhelming constraint: a severe respiratory infection called Newcastle disease sweeps through flocks every year, causing 60–90% mortality. This means smallholders have little incentive to invest in their chickens beyond feeding them household scraps.

PM was aware that the parastatal National Veterinary Research Institute (NVRI) manufactured a Newcastle vaccine called NDV-i2, which did not need refrigerated transport and was suitable for rural distribution; yet no distribution system existed to put the vaccine in the hands of smallholders. If a grassroots system for delivery could be created, this would not only allow smallholders to protect their birds from the threat of Newcastle disease, it would also be an entry point for developing a rural channel for other veterinary services and inputs. PM set out to create a distribution system by activating the country’s largely peri-urban vaccine distributors to recruit village-based inoculators for delivering NDV-i2 vaccine in affordable doses to poultry keepers all over the rural north.

THE EXPERIENCE

The pilot for this intervention started in 2012 with Agriproject Concepts International (ACI) based in Kaduna State. Taking on the supply of NDV-i2 vaccines for the first time, ACI engaged distributors and village vaccinators and actively promoted the vaccine through rural channels. Interested vaccinators received free training and could purchase a start-up pack with five vials of vaccine that would provide a quick return on investment.

The network grew quickly, but demand for the vaccine did not, at first. Farmers were used to the frequent deaths of their chickens and would simply sell them off or eat them when the disease arrived; they were not aware that there was a solution. To educate hugely dispersed rural populations on the availability and benefits of the vaccine was an enormous task that no partner was interested in taking on. PM contributed as much as it could to raising awareness and activating demand, particularly through the vaccinators, who were provided with visual materials. Over time, knowledge has spread, and demand has taken off.

NVRI, the sole manufacturer of vaccines in Nigeria, also came to play a role in rural distribution. The research institute had primarily concentrated on filling institutional orders for the vaccine. PM worked closely with NVRI to introduce a business orientation to vaccine manufacturing. With investments in replacing old equipment, NVRI was able to establish regular production of the NDV-i2 vaccine. PM also supported the institute in reviving some of its unused outstations to act as cold chain-equipped distribution outlets at the state level.

The search for rural distribution channels did not end here. PM explored non-traditional channels of distribution. CBOs, with their existing rural networks for vaccine delivery and awareness creation, proved to be a useful channel. PM engaged two CBOs and facilitated business relationships between these CBOs and vaccine suppliers while sharing costs for awareness activities. The CBOs proved to be very successful in recruiting and training vaccinators, showing that to reach rural poultry with health interventions, all possible routes have to be brought into play.

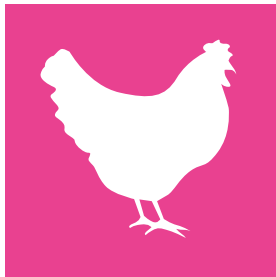
Meanwhile, despite the progress made with village-based inoculators, other veterinary pharmaceutical companies were wary of the reputational risks of working with vaccinators who were not licensed veterinarians. Seeing that future progress lay in working with regulators, rather than creating a parallel system PM approached the Veterinary Council of Nigeria (VCN), the parastatal that regulates veterinary practice. PM presented VCN with the results of working through village-based inoculators, and described

the frequent requests that vaccinators were receiving from smallholders to provide other services. Based on evidence of successes in other African countries, PM advocated for the adoption of policies that would enable community animal health workers (CAHW) to operate, which would help to close Nigeria's immense rural animal health gap.

With the support of two consultants engaged by PM, VCN developed a curriculum, guide, handbook and workbook for CAHWs. This was approved for use nationwide at the start of 2017 and PM is beginning – along with a number of interested service suppliers, veterinary companies, distributors and clinics – to organise pilot programmes that will train the new CAHWs to reach far more rural smallholders.

KEY LESSONS

- Driving distribution of a new product requires a huge investment in creating demand to prime the market. In introducing a new vaccine to smallholders, one of the ways to do this is by driving farmers to recognise and acknowledge a disease and the problems it poses.
- Reaching widely scattered rural poultry populations is a task that requires a diversity of actors, from private veterinary companies and village-based inoculators to parastatals and community-based organisations. Demonstrating commercial potential to all value-chain stakeholders was essential for bringing them on board.
- Veterinary pharmaceutical companies are less interested in the narrow potential of vaccine delivery than in establishing a broader channel for delivering animal health products to smallholders, which can be achieved by working with CAHWs.
- Piloting a value-chain approach around a specific need (such as village-based inoculators to address Newcastle disease) can inspire larger policy changes with country-wide implications (such as the introduction of CAHWs).



Selling poultry to high value markets

The advertisement features a central image of a rooster. To the left, the Nkataa logo is displayed with the tagline 'Bringing the supermarket to your home' and a banner that reads '100% NATURALLY GROWN'. To the right, a red banner says 'LOCALLY GROWN CHICKEN' with a sub-tagline 'SUPPORTING RURAL WOMEN IN AGRICULTURE'. Below this, a red starburst contains the text 'FRESHLY SLAUGHTERED'. Further right, it says 'PLACE YOUR ORDER NOW & GET IT DELIVERED TO YOUR DOORSTEP' and provides the website 'www.nkataa.com'. At the bottom, it lists '*2-3 Hours Delivery' and includes icons for 'Whole chicken', 'Grade A', and 'N100 Delivery'.

To develop a rewarding commercial market for poultry produced by smallholder farmers, particularly women, PM linked producers, aggregators and processors with urban markets and then supported smallholders in producing birds which are sized to meet urban consumers' demands.

THE PLAN

The poultry health intervention that introduced the NDV-i2 vaccine to rural smallholders (see page 54) led many farmers to regard their chickens, which no longer got sick and died early, as valuable assets. At the same time, the strongest adoption of the vaccine was seen among people who already had a market available for their birds. The clear next step in realising the potential of poultry for poor smallholders was to develop more rewarding markets for healthy birds.

PM started with market research in Lagos and Abuja to prove that a high value market for chickens did exist among the urban middle class. Results were very positive, with nearly 90% of respondents saying that they would prefer to eat village chicken if it was available; but most did not wish to purchase live chickens from markets. With this information, PM began reaching out to processors who could provide a channel to these consumers.

THE EXPERIENCE

The first partner to become interested was Nkataa Mart, a newly launched online shop selling groceries and cooked meals. In a six-month pilot, PM linked the company to an aggregator and supported the sales of chickens through cost-sharing promotional activities such as skits on urban radio stations. In the first six-month pilot, village chicken products became some of the online store's bestselling items; Nkataa continues to offer and promote them.

A larger scale market opportunity looked achievable through Geetee Nigeria, a broiler processor linked to Shoprite: selling through Abuja supermarkets on a trial basis. However, Shoprite's interest ceased when they were told the price of chickens, and it is thought that it was too high compared with their regular commercial chickens. PM then worked with Geetee to develop a proposal that would

interest other retailers in Abuja. Others showed interest, but only on the condition that the product received certification from the National Agency for Food and Drug Administration and Control (NAFDAC). Geetee has now secured this, and has also been able to sell village chicken through its own outlets, but has encountered dissatisfaction with the size of the chickens it obtains from aggregators.

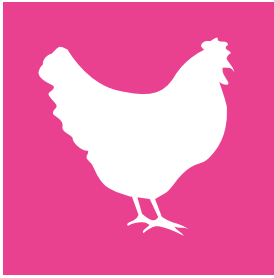
PM had not realised that sizing would be such an issue, and initially set up sales based on numbers of birds. However, urban markets are accustomed to big commercial chickens and demand larger chickens from village producers as well. Geetee has begun buying by weight, while Nkataa introduced a minimum weight for their purchases.

Thus, for the market to function, PM realised that it needed to support smallholders in raising larger chickens while keeping costs low. An experiment has begun to train women to supplement feeding, particularly in the four weeks after chicks hatch, with low-cost feeds such as kitchen scraps and farmed worms. In all, 5,149 village chicken producers have improved their poultry rearing skills – supplementary feeding, sheltering, brooding and vaccination – as well as their business skills, building their capacity to rear more chickens for sale. PM is also continuing to address shortfalls in the still-disorganised systems of chicken aggregation from widely dispersed areas. This may involve establishing hubs in certain local government areas to enable easier connections with buyers.



KEY LESSONS

- Linking smallholder rural poultry producers, predominantly women, to commercial markets incentivises them to take a more commercial approach to investing in their poultry.
- There is high urban demand for indigenous “village chickens” if these can be sourced and processed for the urban market.
- Sales of village chickens are based on bird weight, meaning that smallholders need support to achieve the weights demanded by the retail market.
- In rural regions where smallholders have small, scattered flocks and little access to markets, systems of aggregating and transporting poultry to large buyers are bound to be very difficult, but such systems need to embrace this challenge if they are to reach the poor. However, embracing this challenge comes at a cost which businesses may not be willing to incur. Thus, the cost may have to be borne by a project, or efforts may have to be made to support smallholders to a point where they have large quantities to supply.



A strategy for improved poultry production



To address limitations in smallholder poultry production, and to add to existing and parallel local chicken interventions, PM is working with commercial brooders and community-based organisations to roll out faster-growing breeds of chicken alongside smallholder education on vaccinating and building appropriate housing for their poultry.

THE PLAN

In 2016, as vaccination for Newcastle disease became more common in northern Nigeria (see page 54) and the first links between processors and urban markets for village chickens were made (see page 56), PM sought to integrate these interventions with other efforts to address limitations to smallholder poultry production. The third intervention aimed to improve the chickens themselves by introducing cockerels of a better breed. The cockerels could be purchased by farmers and used to produce hybrid hens that would lay more eggs and grow to a larger size. The intervention would also incorporate vaccination and better housing to keep these more valuable chicks safe from predators. The introduction of supplementary feeding would ensure the hybrid poultry grow to optimal sizes.

THE EXPERIENCE

PM began by working with a commercial brooder to raise cockerels to maturity and supply them to stockists for onward sale to target farmers. In the first pilot states of Kaduna and Kano, community-based trainers were instructed on how to educate farmers on husbandry practices needed to improve production. Training was delivered by trained paravets/cockerel stockists and through channels that were already in place for the NDV-i2 vaccine intervention. The team subsequently identified community-based organisations (CBOs) that were interested in rolling out the model in three states. These organisations could choose either to buy adult cockerels from the brooder, or to buy chicks to raise themselves.

It had already been observed that local hens crossed with the improved cockerels laid more eggs, and that both the eggs and the hybrid chickens were noticeably larger. Farmers following the husbandry practices taught during the intervention were recording more laying cycles and greater survival of chicks.

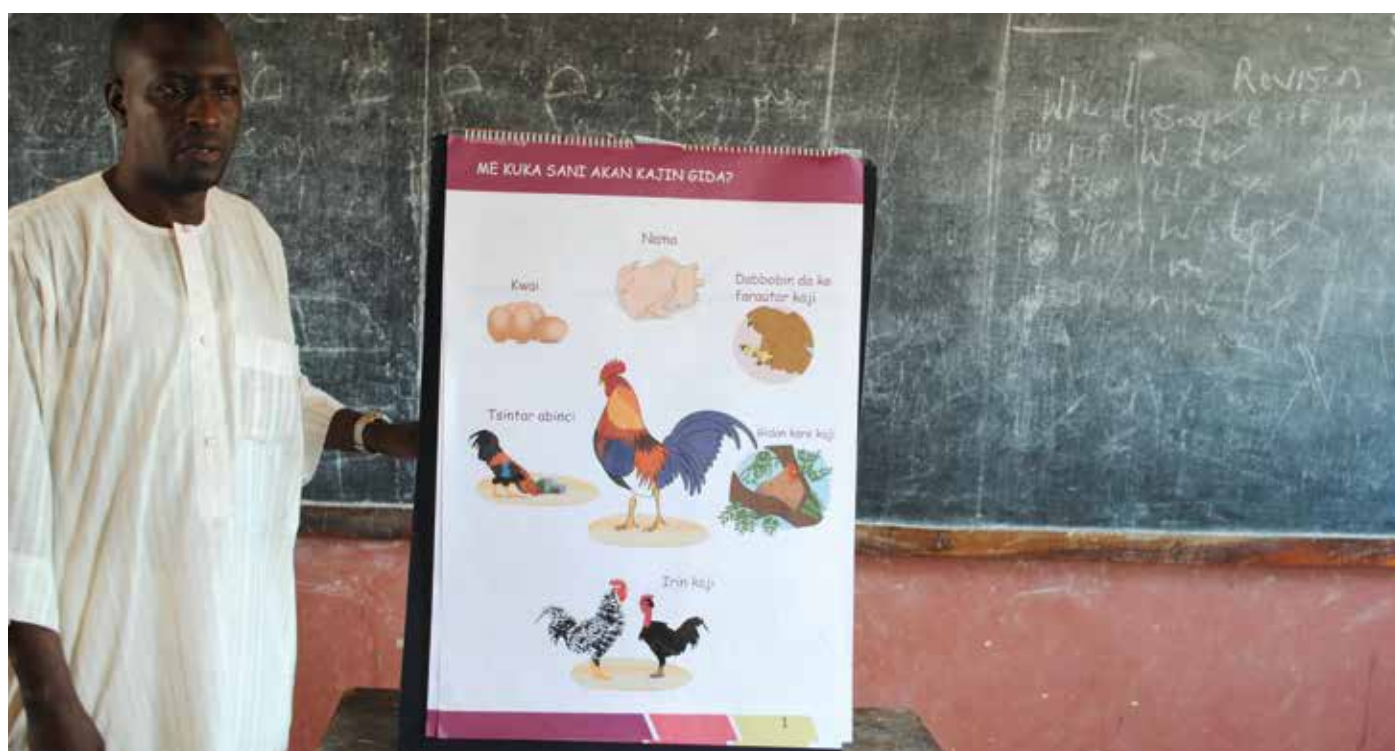
Among these practices, the use of the NDV-i2 vaccine and provision of housing were emphasised, but not adequately supervised. In some areas of the pilot the vaccines were not readily available from partners in the NDV-i2 intervention, and some farmers lost all or most of their birds to Newcastle disease. Similarly, farmers who did not provide housing lost many chicks to predators, and others lost their improved cockerels to theft. Rather than a particular model of housing, the trainers made recommendations based on the materials farmers could procure most cheaply; many farmers were still building housing during the pilot.

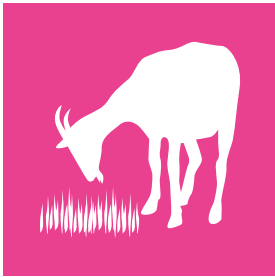
This intervention is still in its first stage, but the lessons learned so far have been shared with other development actors who are interested in improving Nigeria’s poultry production. A sister project, MADE in the south, is already copying some of the successful aspects of the intervention. PM also supported the sister project, M4D, to train communities in Kaduna State on improved production of local chicken, and has presented the approach at the federal level for a future World Bank financed poultry project. The team involved with the scientific project on commercial breeds, African Chicken Genetic Gains, funded by the Bill & Melinda Gates Foundation, has discussed with PM how this model of hybrid production could benefit smallholders. It is hoped that the growing interest in poultry

production will come together in a concerted effort to enable more productive forms of smallholder husbandry for the rural poor.

KEY LESSONS

- Interventions for improving poultry production, poultry health and poultry value chains should proceed side by side. Buyers and processors need large, healthy chickens, but farmers also need assurance that a market exists, or they risk losing their investment.
- Housing, supplementary feeding and vaccination against Newcastle disease are critical elements for successfully improving poultry production in northern Nigeria.
- Smallholder poultry farmers remain unaware of the commercial potential of improved production, and are instead content with rearing a few birds to term and having more poultry eat. They only sell when they have an urgent need for money.
- The smallholder poultry value chain is currently receiving attention from a number of programmes, which should collaborate in seeking practices and linkages that are mutually beneficial.





Feed finishing ruminants



To reduce livestock finishing costs to smallholder farmers, PM supported three feed companies to deliver special ruminant feeds to rural markets and to work with paravets to educate farmers on the benefits of feed finishing practices.

THE PLAN

The feed finishing intervention is based on a set of ruminant livestock-keeping practices that can shorten the traditional 6–12-month fattening period for small ruminants to just 2–3 months. The practices involve feeding the animals with special ruminant feeds while tethered or fenced-in to reduce their activity. Removal of parasites and provision of ample water are also important. These practices can greatly reduce the cost of finishing, thereby increasing turnover and incomes for poor households who raise ruminants near their homes.

This intervention was inherited by PM in 2015 from the first Growth & Employment in States (GEMS1) programme, funded by UK Aid and the World Bank. As GEMS1 ended, DFID asked the PM programme to take up feed finishing activities.

Under the feed finishing partnership, state ministries of agriculture and animal health in seven participating states provide an enabling environment, particularly through the community-based animal health workers (paravets) who work under these ministries to reach smallholders. The paravets mobilise interested farmers for step-down trainings. On the

private-sector side, the key partners are feed companies, who facilitate the distribution of ruminant feed supplement to rural markets for smallholders to access.

THE EXPERIENCE

After reviewing and revising the GEMS1 model, activities began in 2016. Initially only one feed company came on board, but once other companies saw the demand, the number jumped to seven. PM chose to support three of these companies in taking the intervention forward, based on their ability to deliver to the smallholder market.

The paravets who were trained for the intervention understood the techniques well and were able to successfully deliver step-down trainings. Smallholder livestock keepers also picked up the feed finishing approach readily and enthusiastically. Once tested, the technique was found to be highly convincing by farmers, as the results in animal weight gain were visible within the first two weeks; the news spread quickly through communities and demand for finishing feeds grew.

There was also rapid progress in mobilising feed companies. PM made exploratory visits and held discussions on the intervention model and how companies stood to benefit. Seeing the new demand from farmers, the companies understood the opportunity for additional income and the advantages of being recognised as early adopters.

The enthusiasm around the intervention would have built more momentum if not for challenges in delivering ruminant feed supplements across the 'last mile' to rural customers. As interested as they were, many feed companies had had trouble in rural markets and were reluctant to take risks, particularly with selling on credit. They struggled to attract dealers to reach the last mile, as dealers tended to be short on capital, and sales volumes were minimal and only starting to grow. Ruminant feed sales still only account for around 1–5% of the feed companies' turnover, so they were not heavily committed to participating in the market. The result of this challenge to the supply chain was that adequate quantities of feed were often not available in the communities where livestock keepers had been trained by the paravets. Among the paravets, as well, early participation did not always translate into recruitment of farmers. Most of the paravets were engaged in multiple projects through their state institutions which competed for their time.

Despite the slow pace of growth in the rural ruminant feed market, the intervention may have assured a future for feed finishing in northern Nigeria. Many more companies are now getting involved, with some setting up sales

outlets at major livestock markets. Feed finishing is being considered for inclusion in the current government's vision for agriculture, particularly as it fits with the new emphasis on ranching as an alternative to open grazing. About 20 feed companies have signed contracts to supply the ministry with ruminant feeds – although the low price offered has discouraged some of these.

Within the sector, another UK Aid-funded programme – GEMS4 – also took up the feed finishing model and implemented it in some states where PM was not supporting this intervention.

KEY LESSONS

- Techniques that produce rapid, visible results in animals, such as feed finishing, lead to equally rapid buy-in by livestock keepers.
- Farmers are interested in trying feed finishing, but the challenge is ensuring that feed companies deliver the necessary ruminant feeds. This requires better supply chains that reach rural communities.
- Paravets are effective, strategic partners in training livestock farmers, but other businesses compete for their time, and they need to be convinced of the financial gain for their involvement in activities undertaken.
- An intervention that stimulates policy uptake on an approach like feed finishing can encourage the private sector to participate.
- A strong incentive system which provides rewards for engaging farmers may encourage more participation from paravets and consequently farmers.
- By adopting only a part of the feed finishing protocol (deworming and giving clean water in particular), farmers have seen a change in the quality and size of finished animals, even in the absence of the promoted feed supplement.
- Where incentives are involved, extra measures need to be taken to validate information provided by the actors who stand to gain the most.

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