

A close-up photograph of a person's hands, wearing a yellow long-sleeved shirt, pouring a large quantity of small, white, spherical fertilizer granules. The granules are falling from the person's cupped hands, creating a stream of white particles. The background is slightly blurred, showing green foliage and a dirt ground.

EDUCATION AND LASTING ACCESS TO FERTILISER: HOW NIGERIAN SMALLHOLDERS AND BUSINESSES ARE PROSPERING TOGETHER

Propcom



Mai-karfi

Making rural markets work for the poor

A case study by
Propcom Mai-karfi

Acronyms

ACI	Agriprojects Concept International
CMO	Chief Marketing Officer
DFID	Department for International Development
DVD	Digital Video Disc
FEPSAN	Fertilizer Producers and Suppliers Association of Nigeria
FIPS	Farm Input Promotions Africa
GESS	Growth Enhancement Support Scheme
IFDC	International Fertilizer Development Centre
M4P	Making Markets Work for the Poor
NPK	Nitrogen, Phosphorous, Potassium
PMK	Propcom Mai-karfi
PrOpCom	Promoting Pro-Poor Opportunities through Commodity and Service Markets
UK	United Kingdom
VEA	Village Extension Agent
VP	Village Promoter

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Preamble

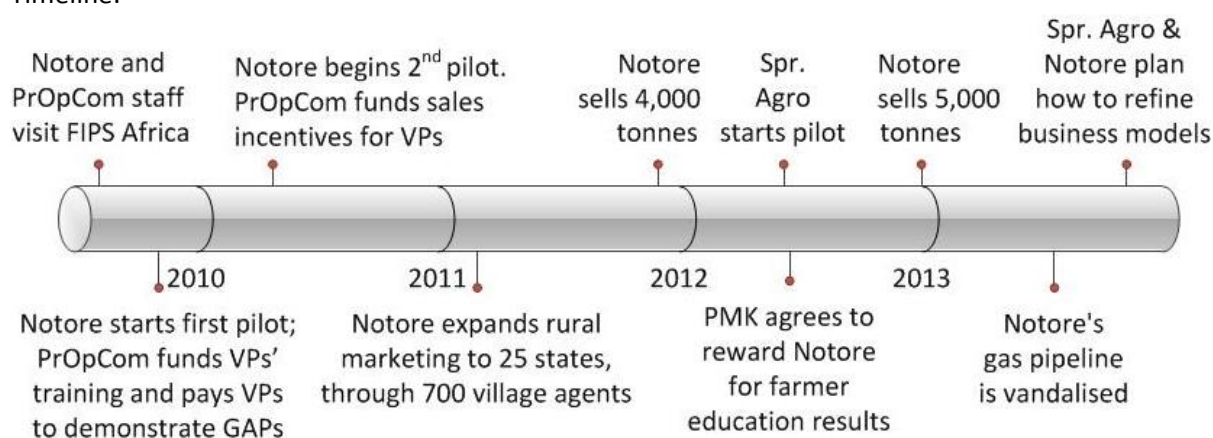
In 2009, a Nigerian business called Notore began to change how it sold fertiliser. Notore made its product more affordable, available and acceptable to poor farmers. Over a million farmers have since bought Notore's products. Often using high quality fertiliser for the first time, their yields have grown on average by 20-30%. Farmers are returning to place even larger orders. Other companies such as Springfield Agro are now learning from Notore's example, selling seeds, fertiliser and other products to rural people whose business needs remain unmet.

This case study explains how Notore and Springfield Agro have made these changes, with the support of the UK aid-funded Propcom programmes. The challenges faced by these firms, as they respond to rural consumers' needs amidst changing market conditions, are also described.

This case study should interest business people looking to reach low-income, rural consumers with their products or services. Likewise, development practitioners and their funders partnering with such businesses.

The first chapter outlines the relevance of Nigeria's fertiliser market to its poor women and men. Chapter 2 explains why farmers lacked good quality fertiliser, before PrOpCom intervened. Chapter 3 describes how, with motivation and assistance from PrOpCom, Notore changed its business model to serve smallholders' fertiliser needs. Chapter 4 summarises how the Propcom programmes have supported Notore to improve and expand its rural marketing, and encouraged new firms to adopt similar innovations. The final chapter reveals how many poor women and men have benefited from these changes, and by how much. It also analyses how likely the results are to last, and grow.

Timeline:



About PrOpCom and Propcom Mai-karfi

Promoting Pro-Poor Opportunities in Commodity and Service Markets (PrOpCom) was a development programme. Operating from 2002 until 2011, the programme was funded by UK aid from the Department for International Development (DFID).

A new UK aid-funded programme, Propcom Mai-karfi, is building on PrOpCom's work in markets such as fertiliser and tractor leasing. Propcom Mai-karfi will operate from 2012 to 2018. Like its predecessor, Propcom Mai-karfi uses the Making Markets Work for the Poor (M4P) approach.¹ While PrOpCom sought to benefit poor Nigerians nationwide, Propcom Mai-karfi focuses on rural northern Nigeria, where poverty is especially acute. Propcom Mai-karfi aims to increase the income of at least 500,000 poor people in northern Nigeria, 50% of them women, by up to 50%.

1. Why are fertiliser markets relevant for poor women and men?

1.1 Millions of poor Nigerians earn their living from farming; many could earn more.

In Nigeria, rural poverty is widespread and extreme. In the country's central and northern regions, where 77% of rural people depend on farming for their income, more people live in extreme poverty than the entire population of Britain.² Across Nigeria, the number of people that are poor appears to be rising.³

Fast population growth, climate change and conflict all contribute to this trend. So does the low productivity of Nigeria's agriculture.

Global and local evidence indicate that greater agricultural productivity can play a central role in reducing Nigeria's poverty.⁴ Cross-country estimates show that growth from agriculture is at least twice as effective in reducing poverty as growth from other sectors.⁵ Increases in agricultural labour productivity are particularly effective in raising the incomes of the poor.⁶ In Nigeria, farming employs at least two thirds of Nigeria's workforce and 90% of its rural population. 14-17 million smallholders account for 90% of the country's agricultural production.⁷ Agriculture is also central to Nigeria's food security. Poor households spend most of their money on food—sometimes up to three quarters of a family's budget.⁸ When yields are low, food prices can rise. Low-income families can then afford less food, worsening their poverty.

A further reason to see agricultural productivity as critical to poverty reduction in Nigeria is that it can be feasibly improved. The causes of underperformance are well known. The next section describes them.

1.2 Low agricultural productivity in Nigeria and its causes

While agricultural productivity has increased in Asia, it has stagnated across most of Sub-Saharan Africa. Within Africa, Nigeria is far behind the continent's top performers. South Africa's cereal yields averaged 3.9 tonnes per hectare between 2007 and 2011; Nigeria's cereal yields were around 1.5 tonnes per hectare.⁹

Yet there is no shortage of demand for Nigerian farmers' produce. The country's fast-growing population and rising middle-class spending power drive a growing demand for food. Food imports are increasing at 11% per year.¹⁰ As well as serving the rising demand, Nigerian farmers could competitively substitute some of the £5.25 billion of food that Nigeria imports annually.¹¹

Several factors prevent farmers from seizing the opportunity created by this unmet demand. These include poor soil quality, pests, diseases and climate change.¹² Widely used land preparation and planting techniques also lower yields by draining remaining nutrients from the soil or causing plants to compete too intensively.

Nigeria's farmers could overcome many of these problems by adopting new inputs and practices. Few employ fertiliser, high-yielding or drought-tolerant seeds, irrigation, pesticides or tractors.

Propcom Mai-karfi is helping input suppliers to change this. The programme's partners are teaching farmers how best to use modern inputs and are improving these inputs' availability and affordability. This case study explores how. While the focus is on fertiliser, many lessons are relevant to other farming input markets too.

The next section explains why making Nigeria's fertiliser market work better is so important to poor women and men.

1.3 Why using fertiliser more and better is vital to reducing poverty in Nigeria

In Nigeria, many fields lack nitrogen, phosphorus, potassium, sulphur and micronutrients. This stunts plant growth, lowering yields, and makes crops more vulnerable to disease.

Where farmers do not use good quality fertiliser, soil degradation is often worsening. Traditional practices, such as scattering ashes or manure, do not add enough nutrients to the soil to replace those lost to harvests, residues and run-off.¹³ Using ash is also unsustainable: rapid deforestation in Nigeria means that less ash will be available in future, and burning trees for ash makes the problem worse. Manure, meanwhile, is in limited supply.

All this heightens the need to find alternative sources of plant nutrition. Fertiliser offers a solution. Used appropriately, fertilisers add to soil the nutrients that farmers need, transforming their productivity.

Studies confirm the effectiveness of fertiliser in Nigeria. PrOpCom found that farmers who used fertiliser correctly were able to improve their yields by 30-55%. As a result, they made an additional 30-40% profit.¹⁴ Research by the Projects Coordinating Unit of Nigeria's Federal Ministry of Agriculture and Rural Development also found that fertiliser, applied correctly, was a profitable investment for smallholders in Nigeria.¹⁵

There is plenty of scope to increase fertiliser use in Nigeria. At 6kg/ha, the country's fertiliser use is among the lowest in the world.¹⁶ By comparison, South African farmers employ 53kg/ha; Brazilian farmers apply 142kg/ha.¹⁷

Many Nigerian smallholders could also raise their yields by applying fertiliser better. Farmers lack knowledge on the right blends, techniques, timing and quantities to apply. Misunderstandings often waste money and can cause crops to be damaged or destroyed. In contrast, proper application coupled with other good farming techniques can make a huge difference. For example, a study conducted in three West African countries showed that when farmers applied fertiliser in 'micro-doses', their millet and sorghum yields increased by 43-120%.¹⁸

Given the huge gains that Nigerian farmers could make by using fertiliser more and better, the next chapter explores why this was not happening before PrOpCom intervened.

2. Why Nigeria's farmers did not use more fertiliser

Farmers in Nigeria recognised the *potential* of fertiliser to improve their crop yields and profits. Yet fertiliser use remained low. This chapter explains why. It starts by describing the problems that farmers faced when trying to buy and make best use of fertiliser. It then describes the root causes of these problems.

2.1 Why farmers did not buy more fertiliser

Few farmers knew how to use fertiliser effectively. Not understanding how to use fertiliser well, farmers are less keen to spend money on it. In a 2010 study, over 90% of farmers surveyed in three northern states agreed that they needed more training on how to use fertiliser.¹⁹ In areas where the Propcom programmes' partners have not intervened, farmers' lack of fertiliser know-how remains evident.²⁰

Good quality fertiliser was expensive; cheaper fertiliser was bad quality. Smallholders value good quality fertiliser.²¹

Often they lacked enough savings to afford it.²² 2008 research in Kwara State found that rural households' annual income averaged just ₦30,000 (£135).²³ Good quality fertiliser was usually sold in 50kg bags, which often cost ₦3,750 (£16) upwards.²⁴

Some farmers managed to buy 50kg bags by pooling their money with neighbours; others borrowed money. Nonetheless, unless they were very confident that using fertiliser would raise their income by far more than it cost, farmers were unlikely to risk their savings on a large bag.

To make fertiliser more affordable, retailers have resorted to opening bags and selling fertiliser in smaller portions. Farmers can buy it by the *mudu* (a local weight measurement of about 2.5kg). However, once the bag is open, the farmer has no guarantee that its contents have not been adulterated. Open bags also lose nutrients through evaporation. Where open-bag fertilisers lead to lower-than-expected yields, farmers often feel discouraged from buying fertiliser again.

Many farmers had further reasons to value fertiliser less. Even in 50kg bags, much was of poor quality. There were also few blends available that gave farmers the micronutrients they needed to make the best of their particular soil or crop type.

Good quality fertiliser was rarely available in the right place, at the right time, to the right people. Research in 2010 showed that over 90% of farmers surveyed in three northern Nigerian states felt that getting fertiliser in time for the planting season was more important than the price paid for it.²⁵ Yet publicly-subsidised fertiliser often arrived late, after the planting season had passed. Farmers have often faced a further barrier to accessing subsidised fertiliser: needing to go through someone well-connected to get it. Over two thirds of farmers in a 2010 survey reported

requiring a “godfather” to access subsidised fertiliser.

Meanwhile, to buy unsubsidised fertiliser, farmers had to travel to urban centres. When travel costs were included, many farmers found 50kg of fertiliser even less affordable.

2.2 Why fertiliser suppliers had not responded to farmers' fertiliser needs

Nigeria's smallholders were (and still are) a huge, underserved market for fertiliser suppliers. In 2010 Nigeria's fertiliser industry body estimated *potential* demand for fertiliser among the country's farmers at 3.5 million tonnes per year.²⁶ In 2010, just 17% of this potential demand was met: Nigerian farmers bought 0.6 million tonnes of fertiliser.²⁷ This left a gap in the market of 2.9 million tonnes per year, worth at least ₦260 billion (£1 billion) per year in lost sales.²⁸

Given the size of the opportunity, it may seem surprising that Nigeria's fertiliser suppliers did not sell more fertiliser to Nigeria's farmers. The next section explains why.

2.2.1. Few smallholders could access subsidised fertiliser

Until 2011, Nigeria's Federal Government bought and distributed large volumes of fertiliser, subsidising 25% of the purchase price. Some state governments added further subsidies; some also procured extra fertiliser themselves.

Officially, the Federal Government contracted fertiliser suppliers who delivered the subsidised fertiliser to state warehouses. Local officials then distributed the fertiliser to farmers. Farmers “officially” paid 60% less than the market price for this fertiliser.

In reality, public distribution was mired in corruption and bureaucratic delays. According to industry experts, inflated purchase prices

and phantom orders were common. Elsewhere, officials diverted up to 90% of the subsidised fertiliser from formal channels, selling it to associates who resold it privately. Many farmers thus ended up buying 'subsidised' fertiliser at near-market prices on the open market, where it often arrived late, adulterated or damaged.²⁹ Ahmadu Talle, a frustrated northern Nigeria smallholder, summarised how these widespread abuses affected farmers:

'We are tired of waiting for fertiliser from the government, they keep telling us "they will give us, they will give us" but we never see anything.'³⁰

In 2011, Nigeria's new Agriculture Minister asserted that between 1980 and 2010, only 11% of farmers got the subsidised fertiliser that was intended for them. ₦776 billion (£3 billion) of fertiliser was diverted.³¹ Research by PrOpCom in Adamawa state backs up this claim. In 2009, just 13% of Adamawa farmers accessed government-subsidised fertiliser. Even among this minority, over 50% paid more than the official price. Subsidised bags usually went to a few well-connected farmers. 82% of the farmers surveyed thus bought fertiliser via the open market.

This waste led the new minister to change how the Federal Government subsidised fertiliser in 2012, three years after PrOpCom's fertiliser interventions began. The new subsidy scheme, which has also hampered open market sales, is discussed in Chapter 4.

2.2.2. Suppliers had disincentives to serve smallholders and overlooked opportunities

Not only did government fertiliser schemes benefit few smallholders; they weakened fertiliser suppliers' incentives to serve smallholders as well. Fertiliser importers and manufacturers found government contracts safer and more profitable than reaching the

farmers who government schemes left underserved.

Sales data from two of Nigeria's largest fertiliser suppliers illustrates this. In 2008, TAK Agro, the owner of the largest blending plant in Nigeria, sold roughly 20% of its supply on the open market and 80% to the government.³² In 2009, Notore, also a leading producer, sold only 16% of its output to retailers in Nigeria; the company exported 6% to Cameroon and sold the remaining 78% to government.

Several reasons explained suppliers' preference for selling to government. Firstly, unsubsidised 50kg bags could not compete on price with subsidised fertiliser.³³ If a fertiliser supplier started selling to smallholders who were waiting for subsidised fertiliser to arrive, and subsidised fertiliser suddenly became available, the private supplier's stock might remain unsold until the following year.³⁴ Corrupt, informal trading of subsidised fertiliser made it very hard to predict when and where the government's stocks would arrive.

Secondly, subsidised fertiliser depressed the price of commercial fertiliser. Traders who resold fertiliser diverted from the government subsidy scheme could offer an artificially low price, which sellers of unsubsidised fertiliser were forced to compete with.

Thirdly, selling to government required less time and money. When selling via the open market, without subsidies to entice customers, suppliers faced greater pressure to get the blend, quality, packaging and promotion right. Networks of retailers must also be built. In contrast, government buyers could act as one-stop shops.

Fourthly, suppliers were more interested in short-term profit than the long-run growth opportunity that smallholders represented. This was despite often being nervous about

losing access to government contracts, or long delays in payment.

Yet even when a Nigeria-based importer or manufacturer sold via the open market, intermediaries (distributors) rarely directed fertiliser towards poor farmers. Distributors could profit quicker and easier by selling to bigger buyers, including larger farms, urban traders, exporters and overseas buyers. Distributors rarely recognised the value of investing in long-term growth by creating new sales opportunities among millions of Nigerian smallholders.

Last but not least, many suppliers and distributors' informal attitudes contributed to their lack of interest in serving smallholders. Smallholders are often referred to as 'peasant farmers', a term which relegates them within Nigerian culture to a lower status, one less worthy of attention and respect, because it connotes that they are recipients of hand-outs. There is a misconception that such farmers can only afford subsidised fertiliser.

These four factors, combined, led fertiliser suppliers to ignore small farmers as potential customers. The next section describes how, as a result, fertiliser suppliers' products, pricing and distribution were unsuited to this large, underserved market.

2.2.3. Packaging and price were wrong; product and information were unavailable

Fertiliser importers and manufacturers' main interest was that distributors were buying their product — they rarely knew who their distributors sold to, nor how. Distributors, selling to large institutional buyers or other traders, preferred large, easy-to-handle 50kg packaging. Before PrOpCom intervened, suppliers had not researched what pack sizes poor farmers preferred. Small packs of fertiliser, cheap enough to persuade new customers to test the product, were unavailable.

Farmers even found the larger packs hard to get hold of when needed. While goods such as soap and soft drinks regularly found their way to remote villages, commercial distribution of fertiliser, which may have successfully made its way from Eastern Europe, often stopped at the nearest town. Rural fertiliser traders, where they existed, usually relied on erratic access to diverted government-subsidised fertiliser.

These traders lacked agricultural knowledge, as well as reliable stock. As such, they were unable to educate farmers on how best to use fertiliser. Suppliers' disinterest in what happened to their product meant that they too rarely taught farmers how to use fertiliser. Development programmes occasionally took over farmer education instead (some also handed out fertiliser), but these programmes' impact tended to be small-scale and temporary. Thus when PrOpCom first scoped the fertiliser market, farmers' best chance of receiving information about farming techniques was via Village Extension Agents (VEAs).

State employees, the VEAs' duties included distributing fertiliser and teaching farmers how and when to use it. There was a shortage of VEAs, however, and their efficacy was low.³⁵ Sokoto State serves as an example. In 2010, there were 65 VEAs on the payroll. To cover all farmers the average extension agent would need to meet 18,052 annually. The average agent met 460.³⁶ A 2010 study, across eight states, found that two-thirds of extension agents spent no more than 10% of their time on training. The quality of this training was also questionable; VEAs had limited knowledge of correct fertiliser usage.³⁷

As mentioned, the unmet fertiliser needs of millions of Nigerian smallholders' presented companies with an annual ₦260 billion (£1 billion) opportunity. To seize this opportunity,

companies would need to change their business models, making their fertiliser more affordable, better available, and teaching consumers how to use it. The next section explains how one company, Notore, pioneered these changes.

3. Introducing innovations that allow farmers to use fertiliser more and better³⁸

3.1. Identifying a suitable partner

Through market analysis, PrOpCom staff understood that millions of farmers could raise their incomes by accessing and learning about quality fertiliser. They recognised the potential of Notore Chemical Industries, Nigeria's only domestic fertiliser producer, to spark solutions. Notore was already large and aspired to be influential – if the firm successfully served smallholders through a new business model, this would catch rivals' attention, raising the possibility of industry-wide change. Equally important, some of Notore's managers felt a strong desire to change the market.

Notore was also keen to partner with PrOpCom. Doing so fitted well with Notore's corporate vision and mission.³⁹ The company had recently been privatised and was restructuring, creating space for new ways of operating. Reaching new, under-served customers could improve Notore's sales and thus the profitability of its large urea production facility. Improving smallholders' access to its product could contribute also to another of the company's intentions: championing a 'Green Revolution' in Africa.

Yet for Notore, investments in serving new, remote, small customers would be risky. Failure could have dire financial consequences for the business. To motivate Notore to go ahead, PrOpCom offered support. Firstly, to

co-design a well-informed business model. Secondly, by defraying a portion of the company's investment risk by co-funding some of the expenses which Notore would incur for pilot activities.

3.2. Selecting and setting up a business model

Notore and PrOpCom began to investigate profitable, pro-poor innovations in fertiliser together. PrOpCom contacted Farm Input Promotions Africa (FIPS), a non-profit organisation. In Kenya, FIPS had successfully encouraged farmers to experiment with fertiliser by packing fertiliser in small, affordable bags. FIPS had also created networks of rural agents who promoted the fertiliser, partly by showing farmers how to use it. FIPS' work had proven that farmers who trial new practices with small amounts of fertiliser later return to their local agents to buy larger quantities. Seeing their yields grow, farmers were able to improve their incomes independently without the need for credit or hand-outs. With PrOpCom funding, FIPS agreed to advise Notore on creating a new fertiliser distribution and sales channel.

Notore hoped that its new sales channel could rapidly increase demand for its products amongst smallholders. This would not be an easy task; Notore could not beat the price of subsidised fertiliser. Notore was confident that its blends were among the highest quality. Yet this alone would not be enough. With this in mind, FIPS helped Notore to design a business model with three distinct selling points: affordability, availability and education.

Affordability. Notore decided to create 50,000 low-cost, trial-size packs of its NPK⁴⁰ and urea fertilisers. More would be packaged if new orders were received from distributors. Farmers would pay ₦120 (£0.48) and ₦150 (£0.61) per 1kg pack of urea and NPK,

respectively. Notore itself organised and paid for the new packaging and for the fertiliser that went in it.

Availability. Notore understood that farmers were likelier to buy its small packs if they could access them on-time and conveniently. This meant establishing a viable ‘last kilometre’ sales and distribution network. To achieve this, Notore started to recruit and train ‘Village Promoters’ (VPs). VPs are rural women and men who sell to farmers in and around their villages. Travelling to villages and enquiring after entrepreneurial people, Notore managers found most VPs through referrals. Neither VPs nor the distributors who sell to them would receive salaries; instead they would earn margins on sales.

Education. If smallholders knew how best to use Notore fertiliser, they would be more satisfied with its results. Thus by teaching potential customers practices that would make their fertiliser usage more effective, Notore VPs could spur demand for their product. Once a few farmers began to adopt these practices, their adoption would soon spread, as new farmers copy successful early adopters.

PrOpCom paid FIPS to teach the initial group of VPs how to demonstrate a series of good agricultural practices to farmers on small plots in farmers’ localities. There, Notore fertiliser was applied alongside crops commonly grown in the local area. Maize was a popular choice. Within five weeks, farmers would see that plant growth in the demonstration plots was much better than usual, and within ninety days the full effects of Notore fertiliser would be apparent. To accustom VPs to organising on-farm demonstrations, PrOpCom offered them initial financial incentives to do so.

Box 1: Being a Village Promoter

Successful VPs are usually entrepreneurial. Seventy per cent use their own capital to start in business; most others borrow from friends. Successful VPs also earn farmers’ trust. It helps to be a farmer yourself; ninety per cent of VPs also farm. Education also helps. Almost all VPs have completed primary school.

Constraints to VPs’ business growth include the cost of transport to faraway villages, and their lack of capital. Many VPs extend credit to customers. Thirty-six per cent have had cash-flow problems due to farmers defaulting.⁴¹

3.3 Testing and improving the rural marketing model

Notore’s first pilot took place between November 2009 and March 2010. It was as much about learning about the market as it was about achieving results.

Sales clearly showed that a market existed for small packs of fertiliser. 2,050 farmers bought Notore’s 1kg packs. The average customer bought 3.5kg, spending ₦473 (£1.93).

Yet the 7,168 packs sold were only 9% of the company’s sales target, prompting PrOpCom and Notore to search for explanations.

Box 2: Site visits

Development programmes can often help businesspeople to learn by taking them out of their comfort zones. Towards the end of the first pilot, PrOpCom accompanied Notore’s Chief Marketing Officer (CMO) as he visited VPs at work. There, the CMO saw a farmer buying a 1kg pack from a VP. Understanding just how poor the farmer was, the CMO realised how relevant and life-changing Notore’s product could be for this farmer and others like him. The experience reaffirmed the CMO’s commitment to the business model.

PrOpCom surveyed farmers and Village Promoters. Notore used the survey findings to review their strategy. The findings reinforced managers' belief in the rural marketing strategy, but led them to change how they executed it:

Affordability. Farmers indicated that a lower price was critical. PrOpCom therefore assessed how much farmers were willing to pay for Notore's product. Notore reduced its prices, but was nonetheless able to maintain a higher price per kilogramme for 1kg packs than for its 50kg bags.⁴²

Availability. Mistrust between distributors and VPs, who had not worked together before, hampered business. So did the product's late arrival in farmers' localities, and VPs' weak motivation to sell the product. Furthermore, some VPs were not entrepreneurial. Many had little working capital, so could buy little stock.

Notore responded by increasing distributor and VP sales margins, to incentivise sales. For the 2010 peak season, PrOpCom complemented this by offering prizes for VPs who sold large volumes of small packs.

Education. It was unclear how many farmers decided to buy Notore fertiliser after seeing VPs' demonstrations. Among buyers, many misapplied the fertiliser despite the VP showing them good practice. VP training was therefore improved. Additionally, Notore added a new technique to VPs' repertoires: micro-demonstrations, whereby farmers themselves set up demonstration plots, with VPs' guidance. PrOpCom continued to reward VPs for setting up well-managed on-farm demonstrations.

3.4 Scaling up Notore's distribution

Having identified ways to overcome the shortcomings of the first pilot, Notore sought to scale up its new sales model. Increasing its network of VPs to 150, Notore from hereon

took responsibility for organising, funding and conducting the training of new VPs. Notore aimed to sell over 900,000 1kg fertiliser packs in its second pilot. VPs were expected to educate 450,000 farmers.⁴³ Fifteen target sites across twelve states were chosen, favouring places where farmers were poor and where good fertilisers were rarest.

Targets were not met. Several factors hampered performance. Firstly, deliveries to distributors were delayed, causing stock-outs. Secondly, forty VPs dropped out of the programme due to initial unavailability of fertiliser stocks. Thirdly, many VPs again spent more time on demonstrations than on market promotions, perhaps due to the incentives offered by PrOpCom.

Despite these shortcomings, 2010 sales were a great improvement on the first pilot's. By January 2011, 61,000 farmers had bought 217,000 1kg packs. Meanwhile, 130,000 farmers had been educated by VPs. Notore managers felt encouraged and, with PrOpCom support, invested in major expansion ahead of the 2011 rainy season. The firm recruited 750 new VPs and introduced a new 10kg pack for farmers who had tested the 1kg pack and wanted to buy a larger quantity. Notore also persuaded seventeen more distributors to participate, enticing them with the opportunity to sell 50kg bags to the VPs as well as small packs. Distributors increasingly recognised that helping poor farmers to test Notore fertiliser could spark rapid sales growth for them in future, as well as for Notore.

In 2011 PrOpCom decided to change how it supported Notore. Like many M4P programmes, in 2009 and 2010 PrOpCom had incentivised its partner to adopt a new business model by defraying the partner's initial risk.⁴⁴ By 2011, this type of support no longer seemed necessary. Notore's

investments were clearly paying off: sales were rising fast. PrOpCom now wanted Notore managers to take responsibility for scaling the business model, and making it more efficient.

To ensure that Notore was capable of doing so, PrOpCom contracted FIPS again, this time to advise Notore on making its rural sales model more efficient and commercially viable. To encourage Notore to take responsibility for motivating and managing VPs, PrOpCom stopped offering VPs sales incentives. PrOpCom instead sought to motivate Notore, offering the company different sizes of reward, depending on how many small packs its VPs sold. These rewards were conditional on VPs continuing to educate farmers.

Encouraging Notore to succeed and take responsibility for its rural sales model was vital for the model's sustainability – particularly because Notore expected such a sharp increase in small pack sales that PrOpCom expected to spend more money on the second pilot than on the first. PrOpCom managers thus took a further step: they reduced the amount of PrOpCom financial support per small pack of fertiliser sold.⁴⁵

Not only did Notore managers take responsibility for scaling the business model in 2011 – in doing so they oversaw a further leap in small pack sales. In 2011, 940,000 farmers bought over 4,000 tonnes of small packs – over eighteen times more than in 2010. This again showed that Notore, despite setbacks, could make money from sales of small packs. Poor farmers were investing in high quality, unsubsidised fertiliser.

PrOpCom research revealed how and why this was happening. Since the first pilot began, 203,000 farmers had seen 3,340 on-farm demonstrations conducted by VPs. 57% of these farmers adopted at least two of the new practices taught. Many of their neighbours

later copied these early adopters. VPs had also educated vast numbers of farmers through 3,330 promotional events at market-places.

Satisfaction was high among farmers who tested Notore fertiliser and applied VPs' good practices. These farmers saw their yields increase by 32% compared with a control group of farmers using other fertiliser. Compared with farmers who did not use fertiliser, Notore users increased their yields by 53% and their productivity by 31%.⁴⁶ After deducting the cost of fertiliser, Notore small pack users collectively earned ₦319 million (£1.3 million) in additional income.

Farmers' satisfaction was also clear from interviews. Suwaida Baso was one such happy customer. A northern Nigeria smallholder, her experience was typical among the farmers that PrOpCom staff interviewed:

'Mallam Haruna, a VP, invited us to a demo on modern farming. He educated us and sold us fertiliser so we didn't have to send our children to faraway places to buy it. (...) I got more money this year than I did last year. This year I will buy more fertiliser to use on even more land.'⁴⁷

As their sales rose sharply, many VPs also greatly increased their incomes. By December 2011, together they had earned ₦61,000,000 (£250,000) in profits from selling small packs – ₦67,500 (£265) each.

4. Improving, expanding and strengthening the rural marketing model

The last chapter outlined how Notore introduced rural marketing innovations with PrOpCom support. This chapter describes how the two Propcom programmes have helped

Notore and its rivals to improve these innovations, to scale them up and to make them sustainable.

This chapter's first section explains how Propcom Mai-karfi (PMK) encouraged Notore to invest more in farmer education. The second and third sections respectively discuss Notore's piloting of video education and mobile-phone based inventory management. The fourth section explains how PMK has boosted some VPs' incomes in periods when fertiliser demand is low by supporting them to start selling poultry vaccines. Section 4.5 summarises research by PMK to support Notore. Section 4.6 reviews the two Propcom programmes' efforts to encourage additional fertiliser suppliers to adopt marketing innovations similar to Notore's. The final section describes the two programmes' efforts to protect their partners' rural marketing innovations against threats to their sustainability posed by government intervention in the fertiliser market. The results chains in the Annex illustrate Propcom Mai-karfi's overall fertiliser market strategy.

4.1 Encouraging Notore to employ more VPs and educate more farmers

PrOpCom ended in December 2011. In early 2012, Propcom Mai-karfi (PMK) began, seeking to increase the scale and sustainability of PrOpCom's fertiliser and tractor market interventions as well as enter new markets. The fertiliser market suited PMK's main aim: raising poor women and men's incomes in rural northern Nigeria. As northern Nigeria's soil is less fertile than southern Nigeria's, fertiliser is in higher demand among northern farmers. Between January and August 2011, 98% of Notore's sales were in northern states.⁴⁸

PMK started 2012 with three objectives in the fertiliser market. Firstly, to ensure that Notore remained committed to serving poorer

farmers. Secondly, to expand and improve the model developed over the previous two-and-a-half years. Thirdly, to encourage other companies to follow Notore's example.

It soon became clear that other fertiliser companies were reluctant to follow Notore's example. Although a video about Notore's small pack business sparked industry-wide interest, producing fertiliser to serve the government's new voucher-based subsidy scheme became suppliers' priority. This highlighted the importance of Notore as a partner. If Notore could sell to even more smallholder farmers, and introduce cost-efficient innovations in its distribution and farmer education, the company's success would demonstrate more powerfully to its rivals why they too should invest in serving poor farmers via the open market.

Yet in early 2012, having attracted nearly a million new customers in the previous year, Notore's managers were focused on repeat sales. Capital constraints limited how much extra fertiliser the company could produce. Notore managers wanted to adequately serve existing customers, and to supply the government subsidy scheme as well.

In April 2012 PMK staff, supported by a FIPS Africa specialist, visited rural areas targeted by Notore VPs. They saw that unless Notore also sought new customers as well as repeat sales, the company had little incentive to continue investing in farmer education. Many existing VPs were busy supplying more fertiliser to last year's customers.

PMK tried to convince their partner to invest in greater farmer education, to achieve further sales penetration. Notore had a powerful reason to do so. Within three-four years, Notore would face much greater competition for Nigerian customers. Companies such as Dangote and Indorama

were opening large new fertiliser plants; Nigeria's production capacity would soon swell.⁴⁹ Notore's best hope of beating the competition was its VPs. They gave the company a head-start – building trust among new customers, offering them valuable education, affordability and convenience, ultimately leading new customers to value Notore's fertiliser and its brand. Recruiting more VPs might therefore make business sense, by allowing Notore to create many more loyal customers among smallholders before rivals' new factories opened.

PMK wanted to incentivise Notore to focus on farmer education rather than just repeat sales, but did not want to undermine Notore's growing ownership of the business model. To motivate Notore to expand its VPs' farmer education efforts, and to make VPs' sales and education efficient, PMK again changed how it supported its partner.

PMK offered Notore the chance to win cash prizes, depending on how many farmers bought its fertiliser and applied lessons taught by its VPs. PMK also co-funded research into ways of improving the rural marketing model's efficiency. Again, PMK did not pay towards equipment, raw materials or other operating costs. Notore met all training costs and recurrent expenditure itself. Marketing managers got used to justifying their budgets for marketing to poorer farmers. The company's Chief Marketing Officer noted that this helped to widen recognition within Notore that farmer education was part of their core business.

Bolstered by the chance to win the prize offered by PMK, Notore's marketing team won internal approval for their 2012 strategy. They called this strategy DEEP Track. D stood for 'distributing': selling more fertiliser in a more efficient manner. The first E was for 'expanding': recruiting more VPs and covering

wider areas. Next was 'educating': teaching more farmers, through demonstrations, market storms and new methods. P stood for 'promoting': increasing product and brand awareness among farmers, and showing that Notore was much more than the average fertiliser company.

Unlike the incentives earlier offered by PrOpCom to Notore rural promoters, PMK was careful not to reward Notore for how many demonstrations VPs did. Instead, the size of PMK's prize depended on the results of VPs' farmer education efforts – the percentage of farmers in Notore's target areas that had bought its small packs *and* applied two or more good agricultural practices taught by its VPs. PMK later verified the results by commissioning two surveys, of 2,620 and 2,977 farmers in Notore's target areas respectively.

Rewarding results instead of outputs strengthened Notore and its VPs' incentives to ensure high attendance at demonstrations and to explain good agricultural practices when promoting Notore fertiliser in marketplaces. Similarly, rewarding farmer education results (instead of the number of on-farm demonstrations) complemented Notore's interest in piloting alternative ways of educating farmers.

Offering a prize instead of a grant was also effective. The amount of money which Notore could win was not big enough to shape the profitability of its investments in farmer education. Yet the opportunity to win a prize offered another valuable incentive: prestige for the company and its staff. This proved effective in attracting approval within Notore for the company's proposed investments in recruiting extra VPs and piloting new ways of educating farmers. Aiming to win the prize for their company, Notore marketing managers also held field staff accountable for ensuring

that VPs under their supervision educated enough farmers.

4.2 Educating farmers using videos

It was Notore marketing managers' idea to educate farmers on good agricultural practices using video. They were looking for ways to maximise the cost-effectiveness of Notore's farmer education. As televisions are rare in rural Nigeria, an event showing a relevant, educational film could attract large numbers of farmers. Videos have several other advantages over demonstration plots. They can more easily mix education and entertainment, for example by including music, which helps to draw crowds. They can also illustrate multiple practices, and show progress over time, much easier than a VP can during an event at a demonstration plot.

Notore created videos showing good practices in the cultivation of five important crops, including content on how to use its fertiliser. Regional managers were given portable projectors which they set up in village halls, schools and other large rural buildings. In 2012, 42 video education sessions took place across seven northern states.

PMK staff and consultants attended some of the shows, gathering feedback to inform Notore's decision-making. They saw that the video shows were popular: 85 people attended the average show, nearly double the attendance at that year's on-farm demonstrations.

The video shows succeeded in educating farmers. In interviews with PMK staff, 59% of farmers could recall two or more good practices.

The videos also succeeded in sparking interest in the firm's products. VPs, who answered farmers' questions after the videos ended, benefited from a higher profile. More farmers

saw VPs as solution providers, and in some cases after the show people approached Notore staff, asking to become VPs themselves.

It also appeared that videos complemented demonstration plots, rather than replacing them. Videos appealed to a large number of farmers, efficiently summarising a range of practices that raise yields. Meanwhile, on-farm demonstrations benefited farmers looking for physical proof and those who wished to see techniques applied in more detail. Two of the three Notore regional managers interviewed stated that video shows led to a rise in attendance at on-farm demonstrations. One regional manager added that video education increased farmers' willingness to offer their land for demonstration plots.

Crucially, the videos were practical to organise. Video shows cost between ₦3,000 - ₦17,000 (£12 - £66) and took on average two days to organise. Notore regional managers felt that between fifty and 175 video shows could eventually be carried out in each state, per year.

Overall, PMK's research confirmed that video shows were a useful innovation. They benefited farmers, Notore and its supply chain partners cost-effectively. The research also identified a few opportunities to improve video shows' effectiveness.

Firstly, the weight of projectors made transporting equipment harder. Secondly, videos should also rely less on text: 40% of audience members interviewed could not read what was written. Thirdly, the timing of the videos largely determined their immediate effects on sales and farmer education. Several interviewees stated that by the time they had seen the videos, they had already planted their crops.

Notore responded by making several improvements in 2013. The company created videos for six more crops. Notore also gave videos to VPs on DVDs, allowing them to organise video shows without requiring Notore regional managers' projection equipment. Videos were also shortened in 2013, to allow farmers to absorb more of the content.

As well as improving the format, Notore expanded the coverage of video shows from seven states to twenty-two. By December 2013, 14,000 people in 210 communities had attended 348 Notore video shows – four times more attendees than the previous year.

Notore's experience suggests that video shows can cost-effectively educate farmers. Chief Marketing Officer Innocent Okuku highlights how videos attract people, and the importance of discussions which take place around the video. In his words, a video show creates:

'an instant platform for farmer-to-farmer exchange of knowledge and a larger business opportunity for VPs. It clearly increases the number of farmers that can be reached through one event.'⁵⁰

4.3 Making distribution more efficient: testing mobile inventory management

In 2010-11, Notore's distributors and VPs regularly ran out of stock. So, Notore and its distribution partners lost sales. Notore believed that if they, their distributors and VPs had better information about stock levels elsewhere in the supply chain, stock control would improve and fewer shortages would occur. More good quality fertiliser would then be available to farmers, when farmers needed it.

One option was for VPs to use their mobile phones to track how much inventory distributors had. Notore's own stock control might also benefit if managers could track distributors and VPs' inventories. PMK facilitated a pilot, starting with a visit to India where Notore learned from Indian experience in using mobile phone platforms to manage orders from rural retailers.

The pilot's results led PMK and Notore to question their initial assumption: that better communication between VPs and distributors could resolve stock shortages. When equipment failed at Notore's manufacturing plant and capital constraints left Notore short of stock and cash to pay for transport, distributors waited up to eight weeks to receive deliveries. Mobile inventory management may have given each supply chain actor an earlier warning that stock-outs were likely, but the scale of stock-outs that Notore faced, and their causes, meant that there was little anyone could do to respond.

PMK's research found other drawbacks of mobile inventory management. Firstly, when stock shortages deepened, VPs would often arrive at distributors' warehouses in person. There, VPs attempted to negotiate privileged access to newly-arrived stock. VPs who waited in their villages therefore risked losing out on sales. Secondly, like farmers, many VPs had low levels of literacy. Many were happy speaking to distributors by phone to discuss stock levels. Thirdly, the system depended on the coverage and reliability of Nigeria's mobile phone network. Fourthly, the software required distributors to use computers and VPs to operate Java-enabled phones. Scale up would thus be expensive. Fifthly, the software assumed that VPs would place orders on behalf of individual farmers. In practice, distributors needed to bulk orders to make transport cost-effective. Finally, a few VPs reported losing access to credit, perhaps

because credit is often negotiated in person. In short, whilst the pilot built Notore's capacity to test and assess possible innovations, mobile inventory management made little business sense.

4.4 Boosting Village Promoters' incomes in periods when fertiliser demand is low⁵¹

VPs' incomes not only depended on stock availability, but on seasonal demand.⁵² Finding extra sources of income during periods when few farmers wanted fertiliser would make VP's business more attractive, helping Notore to attract and retain the best ones. Thus, when PMK suggested a new low-season business opportunity for VPs, Notore responded positively.

PMK was partnering with Agriprojects Concepts International (ACI), a Kaduna-based distributor of veterinary supplies. PMK had persuaded and supported ACI to start selling a vaccine for Newcastle Disease⁵³ to rural households who owned small poultry flocks. This vaccine is in greatest demand between October and March, a time when fertiliser sales are low. ACI needed entrepreneurial rural people who could sell the vaccine during these months. Recognising VPs' entrepreneurialism, ACI was persuaded to offer selected VPs the chance to become part-time vaccinators.

As a pilot, ACI trained fourteen VPs in December 2012. Twelve sold vaccines, outperforming other vaccinators in sales, whilst administering the vaccine correctly. As predicted, they earned income during a period when their revenues were previously low; the average VP made ₦20,000 (£80) from margins on vaccine sales alone. Satisfied, ACI is now scaling up the pilot, training around thirty more VPs in December 2013. This is a

significant increase for a company of ACI's size.

4.5 Supporting Notore with other research

In 2012 PMK supported Notore with research to inform its rural marketing model. To build Notore's capacity to conduct its own research, PMK involved Notore staff in setting research questions and in research design, and explained research methods to them.

One study explored whether Notore's distributors and Village Promoters shared Notore's vision. The study revealed that commercial motivations dominated: farmers' enthusiasm about Notore's fertiliser was what greatly encouraged Village Promoters and distributors. Notore, meanwhile, was asked to improve the timeliness of its deliveries.

Another study assessed opportunities to sell more fertiliser to women. This study is discussed in Chapter 5.

A third piece of research centred on the factors which influenced which fertiliser farmers buy, and how. Among Notore customers, there were six main reasons for starting to buy Notore fertiliser:

- a) Impressed by product demonstration, promotion or advice from a VP.
- b) Ability to trial using a small pack.
- c) Affordability.
- d) Portability.
- e) Saw the effects on fellow farmers' crops when they used it.
- f) Good packaging.

The study also showed an unexpected benefit of small packs to Notore; they enabled the company to sell more to farmers with medium and large landholdings. Some bought small packs to supplement 50kg bags, where the latter did not quite cover their fields. Others switched from cheaper brands after

experimenting with Notore small packs, which they perceived as higher quality.

Critically, the study showed that Notore had built strong brand loyalty among its customers. 83% of interviewees said that they would still buy Notore even if other brands were subsidised by the government. Notore fertiliser's effects on yields and farmers' satisfaction with VPs' advice were the main reasons behind this loyalty.

4.6 Encouraging other fertiliser suppliers to market to poor farmers

As PrOpCom ended in 2011, it seemed likely that Notore's sales of small packs would soon lead other fertiliser companies to emulate its push to market fertiliser to poorer farmers.⁵⁴ The reasons outlined in Chapter 2, and the government's launch of a fertiliser subsidy scheme, made it hard to convince fertiliser company executives to invest in selling their products among poorer farmers via the open market.

Box 3: What barriers are there to other firms copying Notore's success?

Whether a firm copies an innovation depends on two key factors: willingness and ability. Information is vital to both. Many investors require convincing that spending money on an innovation can generate high returns. This is especially important in high-risk markets, where credit is scarce, and when business as usual is profitable. When company executives see rival firms innovating, but have little information on how the innovation affects the rival firm's performance, they may be reluctant to emulate it. And even if they are willing to copy the innovation, they often need technical, operational and strategic knowledge about the innovation to succeed. PMK, by offering technical assistance and temporary financial rewards, helped

Springfield Agro to become more willing and able to invest in rural marketing.

One challenge in encouraging more firms to invest in marketing fertiliser to poorer farmers is that the cause of Notore's success remains partly hidden. Industry-wide and even within Notore, small packs remain a small percentage of total fertiliser sales. Yet small packs, by allowing new customers to test Notore's product, often lead to sales of 50kg bags in future years.⁵⁵ As farmers test the fertiliser in small packs, they build trust in its maker's brand. If they are happy with the results of their test, they may wish to buy a larger quantity of fertiliser the following year. Buying 50kg bags instead of small packs, the customer may now have more choice between brands. Switching brands means taking a new risk, with a much larger investment, however. Farmers' satisfaction with their trials of Notore fertiliser in small packs helps to explain why Notore VPs sold roughly ₦10 billion (£40 million) of 50kg bags in 2013 – 76% of their fertiliser sales.

These findings confirm that unless a fertiliser company executive understands both small pack sales and their effect on 50kg bag sales, they might underestimate the attractiveness of investing in small packs.

Fertiliser company executives may also underestimate how much room there is for competition. Firstly, an estimated ten million Nigerian smallholders still cannot access as much fertiliser as they would like.⁵⁶ Secondly, even where firms do compete for sales, their operations can remain profitable. This is because Notore is transforming fertiliser from a commodity to a branded good in Nigeria, by investing in high-quality blends and free education on farming methods. This kind of competition, based on quality, reliability and service, is less likely to erode profitability than competing on price.⁵⁷

Notore's rivals are beginning to realise the potential of emulating its model. Notore's interpretation of this competition is positive. Notore's Chief Marketing Officer once noted that 'If this small pack strategy creates the opening that pushes the consumption [higher than its current level], then we are creating demand and we actually need competition to join us to fill [the demand]. Really what we want as an organisation is to champion a Green Revolution . . . and we would not be able to do it alone.'

When in 2010 PrOpCom looked to partner with a second fertiliser supplier, to expand farmers' access to and choice of high quality fertilisers, TAK Agro showed the most interest. PrOpCom contracted FIPS to advise the company. Following FIPS' advice, TAK created a new blend of fertiliser, introduced a line of small packs and recruited rural promoters. To motivate TAK's agents to educate farmers as well as selling, PrOpCom offered them incentives to set up on-farm demonstrations.

Several setbacks occurred during TAK's pilot. First, TAK introduced an extra set of intermediaries. Many of these intermediaries sold the small packs themselves, leaving rural promoters short of stock. Secondly, TAK's promoters sold little. This was partly because PrOpCom's incentives for organising fertiliser usage demonstrations meant that demonstrating fertiliser paid better than selling it. Some promoters also lacked good sales techniques. Thirdly, many demonstrations were attended by just five to seven farmers. This implied that PrOpCom and TAK's grant agreement had not been respected. PrOpCom thus only paid TAK, and TAK only paid its promoters, for some of the demonstrations. Finally, TAK resolved setbacks slowly. Unlike Notore, TAK delegated a junior manager to supervise the pilot. His

major decisions needed approval by a Lagos-based director who had little time to spare.

Disheartened, TAK stopped producing small packs and stopped using its rural promoter network. Although in 2012 TAK and PMK discussed piloting both innovations again, TAK was unable to act on a key lesson from the first pilot. Decision-making remained overly centralised. The company also had little working capital. Cooperation again lapsed. TAK has however continued to sell the improved blend of fertiliser it introduced with PrOpCom support.

In 2012 PMK also engaged with a major new investor in Nigerian fertiliser production, Indorama. PMK organised a field trip so that Indorama managers could see examples of rural distribution in Nigeria. Indorama managers felt encouraged to sell within Nigeria rather than only exporting. Before making major marketing investments, however, they were keen to advance the construction of their plant. Securing full finance for the plant in 2013, Indorama imported thirty thousand tonnes of fertiliser, deciding to sell it via the open market. The company is establishing distribution networks in northern Nigeria and in 2014, has begun recruiting an agronomic team to support farmers and strengthen brand presence. PMK and Indorama have both expressed interest in collaboration as the company plans to scale up its rural distribution and marketing.

PMK staff also held several meetings with staff of Springfield Agro, leading to a partnership. 'Set up to provide farm inputs to Nigerian farmers at affordable prices', Lagos-based Springfield Agro sells tractors, seeds and pesticides as well as fertiliser. In persuading Springfield Agro to explore new ways of rural marketing, PMK benefited from mutual trust already built through

collaboration to grow Nigeria's tractor rental market.

PMK and FIPS specialists explained the costs and benefits of investing in small packs and village-based promoters and sellers. Springfield Agro expressed a willingness to experiment. Like Notore, by investing in rural distribution, trial packs and consumer education, the company could boost its fertiliser sales. Springfield Agro could also use such investments to find new customers for its seed and agrochemical product lines. Not only would this raise the firm's returns on investment in rural marketing; by giving farmers access to complementary inputs, Springfield Agro would further improve farmers' yields, improving their satisfaction with each of its products.

Springfield Agro agreed to make 12,000 250g packs of seeds and 14,000 2.5kg packs of fertiliser. Fifty village-based agents, hired on a commission basis in two states, would sell these products and educate farmers. They would be supplied via ten intermediaries, who could also sell to farmers directly themselves. With the approach agreed, pilot activities were planned. At this point, PMK staff showed how market development programmes can add extra value for new partners when supporting them to crowd in⁵⁸ to a market: PMK staff used their experience with Notore to advise Springfield Agro on target locations, supply chain management, operations and the content of a manual for training village-based agents. During the pilot, PMK staff used their monitoring and experience to advise Springfield Agro on a change in price, which boosted sales. Management of the pilot remained firmly with Springfield Agro, however.

To motivate village-based agents to take their roles seriously, PMK also funded rewards. Springfield Agro, its distributors and village-

based agents were offered modest cash prizes if they sold a target amount. Village agents were also offered extra rewards if they trained forty farmers or more, and if attendance at their on-farm demonstrations averaged forty or more farmers.

The pilot was beset by problems, however. Firstly, many village agents did not receive stock until after farmers had planted their crops. The government's voucher-based input subsidy scheme, described in the next section and in chapter 2, was a major cause of the delays, competing with the pilot for stock, capital, managers' time and customers.

Together, village agents sold 5,155 packs of seeds and 1,913 packs of fertiliser during the pilot, to 640 customers. Although the company's sales targets were not met, combining fertiliser and seed sales had allowed Springfield Agro to sell a similar number of units as Notore had in its first pilot.

Village agents also raised smallholders' awareness of Springfield Agro's products. Fewer demonstrations were organised than targeted, however, mainly because some village agents thought they were expected to only perform one each.⁵⁹ Research nonetheless showed that Springfield Agro's agents were capable of promoting its products, whilst teaching poor women and men agricultural practices that would raise their yields and incomes.

This pilot generated useful learning. PMK was reminded that pilots managed by partners do not always run smoothly, but this reveals strengths and weaknesses which the partner can assess and address, with programme support. In contrast, programme-controlled pilots conceal partners' challenges in taking responsibility for an innovation. These challenges only become clear when

programme support ends, undermining sustainability.

After the pilot, PMK reluctantly offered Springfield Agro further support on the basis of the company meeting some key pre-conditions that showed genuine commitment to improved performance. PMK is helping to capture learning from the pilots – a key objective, by conducting three studies. The first study is on farmers' perceptions of the small packs, before and after the 2013 peak harvest period. The second piece of research assesses the commercial feasibility of village agents' activities. The third study measures the impact of the pilot on farmers' incomes. PMK hopes that the research findings can help Springfield Agro, as the company decides how to improve efforts to introduce poor farmers to its high-quality seeds and fertiliser in late 2013 and beyond. There are grounds for optimism. Ravi Kumar, Springfield Agro's Marketing Manager, told PMK staff in September 2013 that:

'We hope to take this programme forward, rectifying the bottlenecks in due course.'

In 2014 Springfield Agro has assigned a full-time manager to scale up its pilot.

4.7 Engaging with government

For decades, federal and state governments' subsidised fertiliser schemes have regularly distracted fertiliser suppliers and distributors from investing in selling to poor farmers. Aiming to focus Nigeria's fertiliser suppliers more on serving smallholders instead of government, PrOpCom encouraged them to discuss and influence government policy.

Distributors, particularly, recognised the benefits of a change in government policy away from subsidised fertiliser sold through state-coordinated redemption centres. They

called upon government to focus on roles such as quality control, instead of competing with companies' own sales efforts. PrOpCom began to support fertiliser suppliers to make this message clearer to government, in association with their industry body, the Fertilizer Producers and Suppliers Association of Nigeria (FEPSAN). This advocacy material drew on PrOpCom's policy interventions (see Box 4).

Box 4: Improving access in Adamawa

Since 2009 programme staff had worked with Adamawa State government to provide evidence of the level of wastage occurring in subsidised fertiliser distribution. When Adamawa's governor discovered that only 13% of targeted farmers were accessing the subsidised fertiliser, and over half of this minority paid more than the official price, he ensured all subsidised fertiliser was supplied from specific farm training centres in collaboration with cooperatives, ward and farmer leaders. He also started a dialogue with commercial fertiliser suppliers to encourage them to sell in areas of the state which were not close to the centres. One year later, a follow up survey showed that 42% of farmers had accessed the subsidised fertiliser. Studies in the following years found further improvements: 47% of farmers benefited from the government subsidised fertiliser in 2011; 52% benefited in 2012. Studies nonetheless found that private retailers were farmers' preferred source of fertiliser. In Adamawa in 2012, 75% of fertiliser was sold by the private sector.⁶⁰

In 2011, PrOpCom's 2009 research on the scale of waste in fertiliser distribution in Adamawa State caught the attention of a new, reform-minded Agriculture Minister. Quoting this research as evidence of the failings of the government's fertiliser procurement system, he stopped the Federal

Government from buying and distributing more fertiliser. This policy shift was later endorsed publicly on television by the President who again quoted the PrOpCom evidence. The Federal Ministry, in collaboration with states, started giving farmers vouchers instead. This new initiative is called the Growth Enhancement Support Scheme (GESS).

Under GESS, farmers are first registered. Those that have mobile phones receive an 'e-voucher' via mobile. In 2013, GESS vouchers on average allowed farmers to buy two bags of fertiliser for 41% less than the market price, from GESS-registered retailers.⁶¹ Nigeria's federal and participating state governments co-fund the subsidy, paying fertiliser suppliers the difference between the discount price and market price for each voucher they redeem.⁶²

IFDC reports that over 4.5 million farmers redeemed fertiliser under the scheme in 2013.⁶³ This implies that more farmers are accessing subsidised inputs than would have under the old subsidy scheme.⁶⁴ Questions remain however over the need for a subsidy; when the fertiliser is of good quality, farmers profit by using it, even when purchased at full price. This is evident from the popularity of Notore fertiliser, even when unsubsidised, and the recent dominance of unsubsidised fertiliser in states such as Adamawa (see Box 4).⁶⁵

By reducing the opportunities for corruption, GESS has resolved some of the shortcomings of the scheme it replaced. Yet GESS has faced many of its own execution challenges.⁶⁶ Farmers have often had trouble redeeming vouchers. Most do not own phones, so can only receive paper vouchers. For agro-dealers and government, processing paper vouchers is expensive and time-consuming. Even mobile-phone based vouchers have been

problematic; poor mobile network coverage has hampered their usage.⁶⁷ Meanwhile, both paper and e-voucher systems create fraud risks. Farmers might manage to register twice, getting double their entitlement to subsidy. There are also reports of "ghost" farmers accessing fertiliser and rumours of suppliers paying public officials for GESS contracts.

DFID, PMK's donor, has therefore asked PMK to test an alternative way of giving farmers vouchers. In 2014, PMK will fund a pilot of biometric cards. 500,000 participating farmers will each receive a biometric card. The use of biometrics is intended to prevent fraud.

When the fertiliser arrives, farmers will take their cards to an approved retailer. Retailers will then redeem farmers' vouchers using card readers and tablet computers. This process makes it easier for farmers to receive subsidised fertiliser, by avoiding lots of paperwork and ending their dependency on Nigeria's phone network.

PMK has also worked to improve the GESS scheme in another way: supporting fertiliser companies to encourage the government to make GESS more competitive, and to recognise the importance of farmer education.

At the time of writing, competition between suppliers of the GESS scheme is stifled because the Federal Government has granted regional monopolies to suppliers. Competition between retailers is also limited by a complex system of annual registration. In some states there are reports of politically-connected businesspeople registering while state officials exclude more experienced retailers.⁶⁸ The problem is worsened by farmers' inability to choose which rural retailer to redeem their voucher from; public officials decide. Whereas Notore and Springfield Agro's customers can buy fertiliser from any nearby dealer, when they want it, and receive advice on how to use

the fertiliser, GESS requires most farmers to buy within a specific time, at a temporary 'redemption center', without being taught how best to use it.

Changing these arrangements is vital to the fertiliser market's development, for several reasons.

Firstly, unless suppliers compete, in each region one will get a guaranteed market among GESS participants. This supplier will have weak incentives to invest in giving smallholders the benefits which they value most about Notore's rural marketing: high quality fertiliser and education on how to use it. Because a supplier has a regional monopoly, farmers will have to accept whatever they can get.

This is particularly the case because GESS, like previous schemes, will discourage suppliers from selling via the open market. Through GESS the Federal Government has increased its annual spending on fertiliser subsidies from ₦22 billion (£88 million) in 2011 to ₦27.5 billion (£110 million) in 2013.⁶⁹ Government-subsidised fertiliser has thus become a larger market, and thus a larger distraction from serving smallholders via the open market.

Therefore in October 2012 PMK invited suppliers and public officials to discuss the future of the fertiliser market. They later sent a communiqué to the Minister of Agriculture. The communiqué called for government to focus less on subsidies and more on improving and communicating agricultural research, quality control, facilitating trade credit, rail and road infrastructure, paying suppliers promptly and targeting poor farmers better using smaller packs. On the future of GESS however, opinions appear to be divided among industry players. Those offering greater product quality, availability and who have built their reputation among farmers through education are keen for greater

competition. Those who have invested little in product quality and marketing to smallholders appear to favour the status quo.

5. How poor women and men benefit, and how much

This chapter first discusses Notore's sales and farmer education outreach in 2012 and 2013. It then discusses how PMK's support for Notore and Springfield Agro's rural marketing has benefited poor farmers, and how much. This chapter's third section analyses women's inclusion in these rural marketing efforts, both as farmers and as village promoters. The final section reviews the sustainability of the rural marketing innovations that the Propcom programmes have helped to create.

5.1 Notore's sales performance since 2012

In 2012, Notore VPs together sold 5,049 tonnes of fertiliser in small packs, to an estimated 1.7 million farmers. Small pack sales were 22% higher than in 2011.⁷⁰ Northern states continued to dominate Notore's domestic sales, accounting for 89% of small pack purchases.⁷¹ That sales rose despite the escalation of conflict in northern Nigeria is particularly impressive.

Analysing Notore's 2012 sales performance, several trends emerge. Firstly, the company's mass recruitment of VPs, encouraged by PMK's offer of a prize for farmer education performance, looks to have driven growth in small pack sales. Small pack sales per VP actually fell in 2012, as many farmers switched to 50kg bags. Yet by recruiting 1,000 new VPs, Notore made its fertiliser accessible in more parts of the country, gaining new small pack customers.

Secondly, VPs sold more fertiliser in 2012 partly because they educated more farmers.⁷²

Research shows that Notore's farmer education is effective – both in teaching and creating new customers. A PrOpCom study found that 57% of farmers who attended VPs' demonstrations adopted at least two of the good agricultural practices taught. More Notore customers cite VPs' education as the main reason for their first purchase than any other factor.⁷³ Farmers who adopt these good practices boost their yields and often save money in the process.⁷⁴ This leads many to buy more fertiliser in the long term. Among 2,977 farmers surveyed in 2012, those who adopted two or more of VPs' good practices bought 42% more Notore small pack fertiliser than those who did not.

Finally, stock shortages greatly impeded sales. Notore faced long delays at Lagos port when importing NPK, and a plant failure affected urea production. The government's GESS voucher scheme tied up most available stock and working capital, leaving little for small packs. Distributors were also unable to procure small packs if they owed Notore money for GESS supplies.

In 2013, unforeseen circumstances made stock shortages even worse. Notore suddenly lost its production capacity early in the rainy season. The oil and gas pipeline which Notore's urea production depends on had been vandalised. Notore had manufactured just 705 tonnes of urea. When production resumed in October, most Nigerian farmers no longer needed fertiliser. Compounding the loss of urea sales, the company had chosen not to market NPK small packs in 2013, after losing money on delayed imports in 2012.

Again, stock shortages were compounded by GESS. Although Notore chose not to supply the GESS programme directly, fifteen of its distributors did.⁷⁵ This tied up most of Notore's available fertiliser. GESS also affected open-market demand: 30% of

distributors reported losing sales to VPs who faced competition from subsidised fertiliser. This competition, and the stock shortages, had knock-on effects on VPs' motivation; some VPs invested less effort in educating farmers than they would have.

A key lesson of Notore's 2013 performance is that even successful business models are vulnerable to external shocks – especially when they depend on one business. For development programmes that are serious about sustainability, this highlights the importance of working with more than one market player, and favouring innovations that are attractive enough to withstand shocks. Fortunately, Notore's rural marketing efforts appear resilient. The company's managers plan to revitalise rural distribution channels in 2014.

One idea that they are considering would make the company's growing network of VPs easier to manage. Experienced Village Promoters could gain the opportunity to become 'Supervising VPs', responsible for coordinating new VPs in their area. The new status might also motivate VPs to work hard. Notore would make the 'Supervising VP' title prestigious, awarding it based on VPs' performance as well as their experience.

5.2 How farmers have benefited since 2012

In 2012, PMK estimated that 619,000 more Nigerian farmers bought Notore fertiliser and adopted at least two good practices due to Notore VPs' teaching.⁷⁶ 222,000 of these farmers did so due to PMK's influence on Notore. The remaining 397,000 would have started buying Notore fertiliser and adopting good practices anyway, due to PrOpCom's earlier work.

In attributing one third of Notore's 2012 farmer education results to its interventions,

PMK can draw on a range of evidence. Firstly, VPs' education outreach accelerated much faster in 2012 than would be expected under business as usual. Whereas the number of new farmers who bought Notore fertiliser and adopted at least two good practices rose by 55% in 2011, it leapt by 142% in 2012.⁷⁷

Secondly, senior Notore managers recognise PMK's influence. As described in Chapter 4, they began 2012 focusing more on repeat sales than on educating new potential customers. Notore's Chief Marketing Officer, responsible for recruiting and training new VPs in 2012, acknowledges the role played by PMK. He notes that:

'The prize [offered by PMK] strengthened my ability to convince the business to continue investing in farmer education.'

Notore's investment in new VPs drove the increase in farmer education and access to its fertiliser. Stock shortages prevented like-for-like sales from rising, and probably affected their motivation to educate farmers.

Thirdly, Notore field staff recall how the desire to win rewards encouraged Notore managers to hold them accountable for ensuring that VPs under their supervision educated farmers. Regional managers were given farmer education targets, and asked to regularly report on progress.

PMK research shows that, on average, yields increased by 19% among the 222,000 farmers who benefited due to PMK's influence on Notore. PMK's cost per beneficiary reached was just £3.80. In 2012 alone, these farmers earned on average an extra ₦928 (£3.71) per season in profit, compared with similar farmers who did not buy Notore fertiliser. This represents an 11% increase in income from the relevant crop. Together, these farmers

earned an extra ₦206 million (£820,000) in 2012, due to PMK's partnership with Notore.

By 2014, these farmers are expected to use larger amounts of fertiliser as their confidence in the product grows and their incomes increase. Using surveys of farmers' purchasing patterns, the programme predicts that the 222,000 farmers will, on average, profit by ₦6,200 (£24.80) in 2014. This would bring their annual additional income, due to PMK's partnership with Notore, to ₦1.34 billion (£5.3 million) by 2014.

Most of these farmers live below the poverty line.⁷⁸ Thus by boosting these farmers' incomes, PMK's partnership with Notore has contributed to poverty reduction. By making more money and food available to low-income farming families, Notore's fertiliser and farmer education is also boosting food security. In northern Nigeria, where nearly half of children suffer from stunting, this is particularly important.⁷⁹

PMK's partnership with Springfield Agro also benefited farmers. 1,427 farmers learned how to use Springfield Agro's products, and witnessed other modern, yield-boosting agricultural practices. 644 farmers bought Springfield Agro's small seed and fertiliser packs from its village agents. These customers on average made ₦13,326 (£54) more profit than similar farmers who chose not to buy.⁸⁰

As well as benefiting farmers, the Propcom programmes' work with Notore has stimulated the creation of 3,920 active VP businesses. As VPs' businesses grow, many set up shops. On average VPs now sell half of their fertiliser from their shops. Together they now employ roughly 2,800 part-time, paid assistants.⁸¹ Some VPs also employ others to organise on-farm demonstrations for them, essentially managing their own mini-networks of VPs.

5.3 How women have benefited from PrOpCom and PMK interventions

Fertiliser is one of several markets PMK is trying to make work better for poor women and men. PMK targets some markets largely because of their potential to improve poor women's incomes and wellbeing. Other target markets, including fertiliser, are more relevant to poor men in northern Nigeria's current social and cultural context, where fewer women farm than men.⁸² In such markets, PMK applies a minimum principle: do no harm to women.

Research indicates that PMK has achieved this. Women are, in general, no more excluded from VPs' farmer education than they are from farming. A 2013 survey of agricultural input retailers supports this claim.⁸³

Notore's records also support this claim, but add notable cautions. On the one hand, women made up 14.4% of attendees at on-farm demonstrations in northern Nigeria, in 2012. On the other hand, in eight northern states not one woman attended on-farm demonstrations. It is worth noting that in these states, social norms often prevent women from leaving home without a male relative.⁸⁴ Meanwhile, in Nigeria's southern states, women's attendance was higher, peaking at 58.2% of attendees in Imo State.

In 2013, 13.5% of video show attendees were women. This proportion reflects the predominance in the pilot of socially conservative northern states, where very few women attend mixed public gatherings. Women's attendance in 2013 was higher than in 2012, when PMK research found that videos were usually shown in the early evening, while women tended to be cooking.

Based on its research findings that women made up 15% of the Notore small packs

buyers who adopted at least two good practices taught by VPs, PMK estimates that 33,000 northern Nigerian women benefited from its 2012 interventions. These women collectively earned ₦30 million (£120,000). By 2014, PMK predicts that these women will profit from their purchase of Notore fertiliser and adoption of good practices by an additional ₦200 million (£800,000) per year.⁸⁵

As well as monitoring women's inclusion, PMK has helped Notore to look for opportunities to boost it. PMK interviewed male and female VPs and farmers in Benue and Taraba states, to understand what determines women's access to fertiliser and farmer education.

The study highlighted that women in socially conservative households and communities struggle to attend demonstrations. Other women do not. Yet even those women restricted to their homes or neighbourhoods may still access fertiliser, by sending their husband or children to buy it for them.⁸⁶ Suwaida Baso, quoted in Chapter 3, is one.

Among women able to attend demonstrations, a similar proportion (75%) as men (80%) report learning and applying what they learned. The content of demonstrations is thus equally useful to women and men. Meanwhile, female farmers interviewed clearly valued Notore's small packs and VP network, and the company's product quality. Theresa Ugere from Benue was one:

'No fertiliser from the government last year. The VP channel bailed us out. It is much better to buy the 1kg pack compared with the mudu on sale in the market.'

PMK's study also found that male and female farmers prioritise differently when deciding on fertiliser purchases. For women, trusting the vendor matters most, whereas men place

greater emphasis on their own perception of product quality. Price and convenience are important to both.

The study found that recruiting more female VPs would not significantly boost Notore's sales to women. Irrespective of their gender, VPs that succeed in selling large volumes of fertiliser to women often had prior experience of selling agricultural inputs.

5.4 The likelihood of more farmers benefiting in future

This section considers whether the right conditions are in place for the rural marketing model piloted by Notore, and later Springfield Agro to last, continuing to benefit poor farmers in Nigeria.

5.4.1 Are PMK's partners willing and able to serve smallholders after PMK's support ends?

There is strong evidence that Notore is willing and able to continue investing in marketing its fertiliser to smallholders.

Firstly, throughout the period of this case study (2009-2013), Notore has remained in control of its business and how it has grown. The programmes did not direct the company; they made it easier for the company to explore and then adopt new marketing strategies to increase sales. The bulk of the investment in the business change process was made by Notore. So, by 2013, Notore no longer required any financial incentive or technical assistance to continue with the business.⁸⁷ And since 2009, Notore and its distributors have organised and paid for VPs' recruitment, training and re-training. In 2012, Notore financed the sales incentives for its growing cohort of VPs. In 2013, without any donor funding, Notore continued to train VPs and sell small packs to poor farmers via them. VPs continued to educate their customers on good agricultural practices.

Secondly, Notore now oversees its rural marketing strategy, and marketing managers design and execute their own plans. They also invest in improvements, surveying distributors, VPs and farmers to gauge their satisfaction, and introducing new methods such as video education. Regional managers have also spent time understanding distributors' needs, and helping them to plan how to grow their business with Notore.

Thirdly, Notore's commitment to serving smallholders becomes clear when speaking to Notore managers. They are proud of how rural marketing contributes to the company's mission,⁸⁸ whilst positioning their company ahead of its competitors in creating a brand which millions of farmers trust and value. 'Farmer education is our cutting edge. It sets us apart,' notes Notore's Chief Marketing Officer. Many farmers agree. Learning from VPs how best to use Notore's fertiliser, new customers make the most of their purchase, reinforcing Notore's reputation for quality among farmers. Furthermore, through its VPs, Notore can interact with end consumers in ways that rivals' packaging and adverts cannot. 'VPs are a USP' notes the Chief Marketing Officer.⁸⁹

Fourthly, farmers' strong interest in Notore's fertiliser is clear from the company's 2012 sales figures. The product has remained in demand, despite price rises. Per kilogramme, Notore fertiliser is not always the cheapest, but poor farmers prefer it because they trust it to raise their yields, making them wealthier; it is a good investment.

Fifthly, Notore has invested over ₦300 million (£1.1 million) in marketing to smallholders since its work with PrOpCom began – further evidence that Notore values rural marketing.

Sixthly, Notore continues to invest in its distributor and VP network despite the temptation to supply GESS directly instead.

Finally, Notore's commitment is illustrated by the company's plans to use its VP network to seize other 'last kilometre' business opportunities. The company is starting to use its VP network to enter other businesses. Seed is one example: in 2013 VPs and other retailers sold 631 tonnes of Notore seed to farmers. Buying back produce from farmers is another example. In 2011 Notore bought cabbages in Plateau State when a local shortage of buyers was causing prices to collapse. Notore profitably resold the cabbages in Cross River State. The firm anticipates VPs buying more produce from farmers in future, and selling more agricultural inputs. Meanwhile, Notore has found a new type of sales outlet for small packs of fertiliser. In 2012, around 500 pesticide retailers stocked its small packs.

Springfield Agro is at a much earlier stage of developing its rural marketing. The firm may require further donor support over the next two or three years, to encourage and enable it to refine and expand its model. After that, the firm's rural marketing should generate enough sales to justify Springfield Agro funding and steering it independently.

These companies' commitment to selling to and educating smallholders is an important indicator of sustainability. It is also a sign of changing social norms. Before the Propcom programmes intervened, many poor people considered fertiliser was for rich and socially-connected farmers. Fertiliser suppliers meanwhile thought that 'peasant farmers' could not afford their products. Over a million Nigerian smallholders have since bought high-quality, unsubsidised fertiliser, and profited by applying it well.

5.4.2 Are the rural marketing innovations likely to survive, if a key individual or firm is lost?

Springfield Agro's piloting of rural marketing, and Indorama's stated intention to start mass promotion and marketing soon after their plant starts production, reduce the innovations' dependency on Notore. PMK will probably offer further light assistance to these early-adopters in the next few years, aiming to ensure and accelerate these innovations' industry-wide adoption.

PMK will be aided by the high profile that Notore's success has attracted; the company has won awards for its supply chain and customer service.⁹⁰ The company's efforts to serve smallholder farmers using small packs have attracted praise from Nigeria's Federal Minister of Agriculture, Forbes and a high-profile Ernst & Young conference.⁹¹ Notore's small packs and farmer education have also won recognition from the Central Bank of Nigeria, and helped Notore to receive the Central Bank's backing during a refinancing process in 2011. But the main effect that attracts other companies is the positive response that distributors and customers have had to Notore (though this has weakened for distributors since 2012 supply problems started).

In the coming years, companies investing in rural marketing are also likely to benefit from the rise in firms recruiting and tasking staff to improve their rural marketing across a range of sectors. This trend, which is partly the result of PMK's support and influence, means that in future more people will be available in Nigeria's jobs market with the skills and experience needed for successful rural marketing.

5.4.3 How are changes in market conditions likely to affect the rural marketing innovations?

Foreseeable price fluctuations do not threaten the future of rural farming input marketing. Many farmers continue to demand

fertiliser, despite price rises in recent years. This is because fertiliser price rises have been driven by rising food prices.⁹² Furthermore, high fertiliser prices have spurred expansion in global fertiliser manufacturing capacity, enabling supply to meet growing demand. Like fertiliser, when buying seeds farmers often consider the return on investment, rather than simply the cost of seeds.⁹³

Notore values its rural marketing innovations enough to sustain them in the event of further shocks caused by conflict or criminality. The temporary shutdown of Notore's plant due to vandalism, and the financial difficulties this has caused, have not prevented renewed commitment to selling small packs and engaging VPs.

Probably the greatest threat to the spread of the rural marketing innovations described in this case study is the GESS voucher scheme, which PMK's donor has nonetheless obliged the programme to support. Unless GESS encourages competition between suppliers, it will further weaken their incentives to invest in quality and accessibility. And whilst at GESS redemption centres involved in biometric card pilots, retailers have started sharing information on correct fertiliser use, the lack of competition between GESS suppliers discourages them from investing in educating farmers.

That said, even if GESS grows without becoming more competitive, suppliers will still have several incentives to serve smallholders better via the open market:

Quality: PMK research shows that many farmers care more about a fertiliser's effects on yields and crop quality than its price per kg. As a result, companies like Notore which offer high-quality fertiliser can often out-compete lower quality, subsidised fertiliser. In a 2013 survey, 83% of Notore customers said

that they would still buy Notore even if they had access to subsidised fertiliser. 70% of loyal customers cited product quality as the reason.

Sustainability: Under GESS, farmers are only entitled to vouchers for four years.⁹⁴ Unless government policy changes, thereafter farmers will buy fertiliser via the open market.

Availability: VPs make fertiliser and advice regularly available in farmers' localities. GESS does not. Many farmers have limited transport options, so value this convenience.

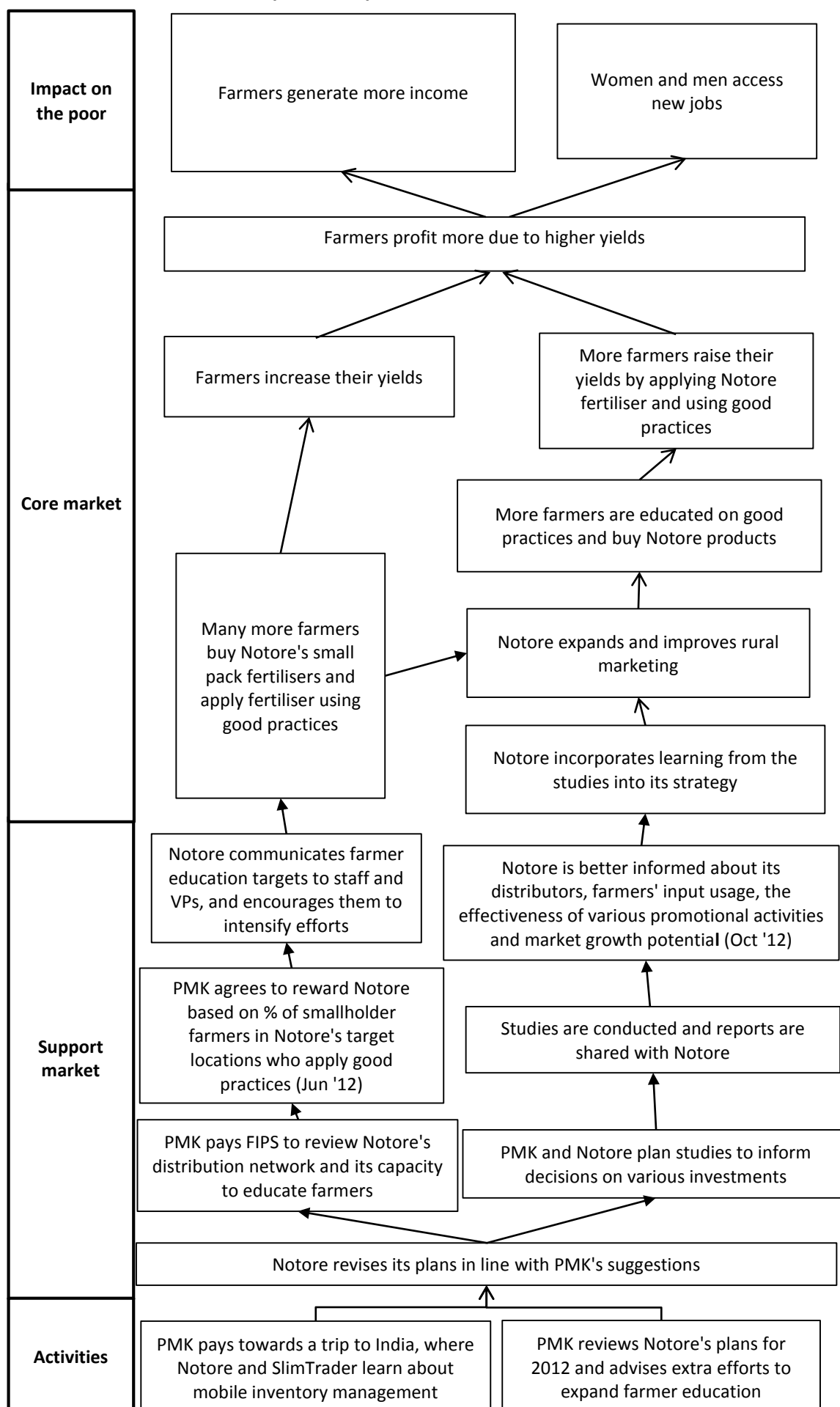
Affordability: In 2013 a subsidised 50kg bag of urea cost around ₦3,170 (£12.70). Farmers could experiment with urea fertiliser that was much cheaper: a 1kg pack cost just ₦140 (56p).⁹⁵ Small packs' cheapness might therefore win business among farmers who wish to experiment. Likewise, farmers who cannot afford a 50kg bag even when subsidised, and farmers who only need small quantities of fertiliser. Women whose landholdings are small, and whose restricted mobility allows them only to cultivate land within their compound, might be two such groups.⁹⁶

New applications and co-benefits: as businesses become more aware that the rural marketing innovations pioneered by Notore can be used to buy and sell products other than fertiliser, their adoption is likely to grow.

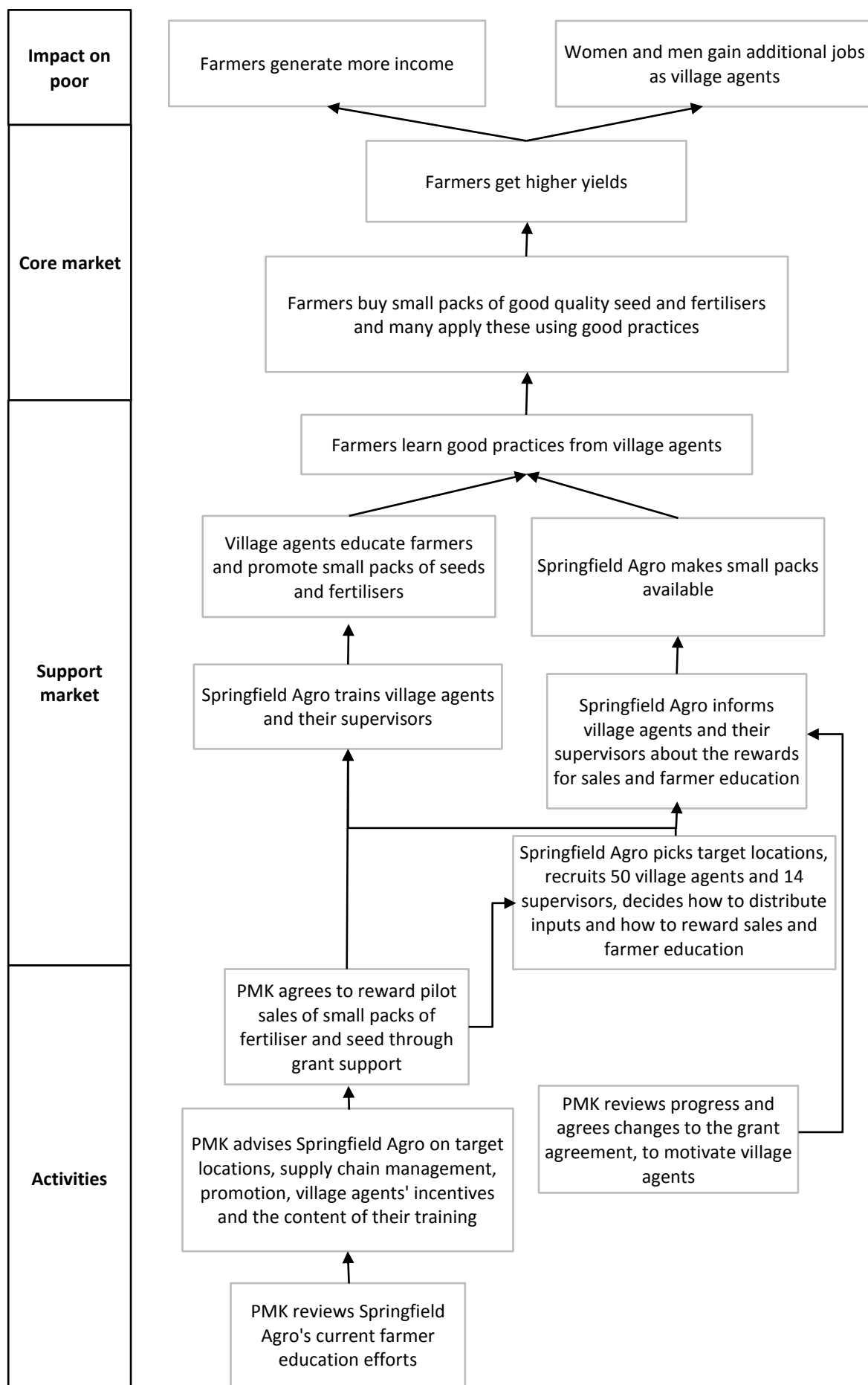
PMK is already supporting other companies to learn from Notore's experience. By investing in 'last kilometre' sales and distribution, as well as consumer education, PMK's partners are beginning to unlock vast unmet demand at the 'Bottom of the Pyramid'. Rural Nigerians are benefiting by accessing new products, ranging from high-quality seeds to poultry vaccines and soap.

6. Annex: Results chains

Results chain for PMK's 2012 partnership with Notore



Results chain for PMK's 2013 partnership with Springfield Agro



¹ The Making Markets Work for the Poor (M4P) approach to reducing poverty offers guidance on how development programmes can tackle poverty. It is guided by four underlying principles. 1) Systemic action: understanding where market systems are failing to serve the needs of the poor, and acting to correct those failings; 2) Sustainable change; 3) Large-scale impact; 4) Facilitative action: development programmes stimulating changes in market functions or players, instead of displacing them.

This definition is adapted from the M4P Hub website, www.M4Phub.org

² The National Bureau of Statistics (NBS) [Nigeria Poverty Profile 2010](#) states that 99,284,512 Nigerians lived in absolute poverty in 2010. According to the UK [Office for National Statistics' Annual Mid-year Population Estimates, 2011 and 2012](#), the British population was 63.7 million in mid-2012.

³ [NBS. Nigeria Poverty Profile 2010](#).

⁴ Several papers that support this assertion are listed on p. 30 of World Bank. (2007) *World Development Report 2008: Agriculture for Development*. See also Gutierrez, Orecchia, and Serneels. (2009) 'Does Employment Generation Really Matter for Poverty Reduction' in Kanbur and Svejnar (eds) *Labour Markets and Economic Development*, cited in Meelamed, Hartwig and Grant. (2011) *Jobs, Growth and Poverty: what do we know, what don't we know, what should we do*. Overseas Development Institute.

⁵ Ligon, Ethan, and Elisabeth Sadoulet. (2007) *Estimating the Effects of Aggregate Agricultural Growth on the Distribution of Expenditures*. Background paper for the World Development Report 2008.

⁶ Bravo-Ortega, Claudio, and Daniel Lederman. (2005) *Agriculture and National Welfare around the World: Causality and International Heterogeneity since 1960*. World Bank.

⁷ [CIA World Factbook \(2013\) Labor force by occupation](#); [IFAD. \(2012\) Enabling poor rural people to overcome poverty in Nigeria](#); NBS, Central Bank of Nigeria and Nigerian Communications Commission (2009), *2008 Annual Collaborative Survey Of Socio-Economic Activities in Nigeria: Final Statistical Report Vol. 1*, p. xxiv.

⁸ Cited in PrOpCom. (2011a) *Making fertiliser markets work for the poor in Nigeria: A PrOpCom case study*.

⁹ World Bank, open data on cereal yields. <http://data.worldbank.org>.

¹⁰ According to the Minister of Agriculture and Rural Development, Dr Akinwumi Adesina, cited in [Hammed Shittu, 'N1.3tn Spent on Food Imports Worries Fed Govt', This Day, 5th July 2013](#)

¹¹ This food import includes ₦356 billion (over £1 billion) of rice. Rice is grown by large numbers of Nigerian farmers. As domestic rice milling capacity expands, higher yields would allow Nigerians to consume more domestic rice. See [Hammed Shittu, 'N1.3tn Spent on Food Imports Worries Fed Govt', This Day, 5th July 2013](#); [Why Does Nigeria Import Rice? Commercial Processing and Food Security, USAID MARKETS, July 17 2009](#).

¹² Many smallholders' crops are rain-fed; rainfall is increasingly erratic. For details of how climate change is affecting agriculture in northern Nigeria, see [Farauta, Egbule, Idrisa and Agu. Climate Change and Adaptation Measures in Northern Nigeria: Empirical Situation and Policy Implications](#).

¹³ For example, from 2002 to 2004 Nigerian soils lost 30-60kg/ha of nutrients due to insufficient repletion. See Bosede, Ayoola Josephine. (2010) *Economic assessment of fertiliser use and integrated practices for environmental sustainability and agricultural productivity in Sudan savannah zone, Nigeria*.

¹⁴ PrOpCom's study found that farmers using high-quality fertiliser and the correct application and spacing techniques averaged yields 32% higher than those of a control group using other fertiliser, and 53% higher than the average yields of non-users of fertiliser (keeping constant other variables such as crop, planting techniques and irrigation).

¹⁵ This study found the following benefit-to cost ratios of a moderate application of fertiliser: maize (between 1.21 and 1.52), millet (2.87), rice (1.61), cassava (2.66) and yam (3.85). Projects Coordinating Unit (PCU), Federal Ministry of Agriculture and Rural Development (FMARD). (2002) *Farm Management Survey and Advisory Services: 2000/2001 Advisory Handbook*.

¹⁶ World Bank Open Data. (2013) <http://data.worldbank.org/indicator/AG.CON.FERT.ZS>. In line with the World Bank's figures, researchers from the International Food Policy Research Institute (IFPRI) estimated Nigeria's fertiliser consumption to be 6kg per hectare between 2005 and 2009. See Hiroyuki Takeshima, Ephraim Nkonya and Sayon Deb. (2012) *Impact of Fertilizer Subsidies on the Commercial Sector in Nigeria: Evidence from Previous Fertilizer Subsidy Schemes*. IFPRI.

¹⁷ World Bank, open data. 2002 - 2009.

data.worldbank.org.

¹⁸ Bationo, A., Hartemink, A., Lungu, O., Naimi, M., Okoth, P., Smaling, E., and Thiombiano, L. (2006). *African soils: Their productivity and profitability of fertilizer use*. Presentation at the Africa Fertilizer Summit, 2006.

¹⁹ International Fertilizer Development Center (IFDC) 2010 Fertilizer Voucher Program Impact Evaluation.

²⁰ In 2013 sixty farmers working outside PMK partners' target areas in Gombe and Kano states explained how they sowed their seeds and applied fertiliser. Out of eight possible good practices, no farmer used more than two. Just 6% applied two; 68% applied one and 26% applied none. This supports the view that farmers' knowledge of modern agricultural practices was low before Propcom partners' education efforts began.

²¹ In 2011, PrOpCom surveyed 120 farmers in eight states. For 86%, the quality of available fertiliser would affect whether they decided to buy it.

²² This may explain why analysis of data from a large, nationwide household survey conducted in 2006 showed that 'farm households in the lowest quintile are about three times less likely to use fertilizer compared to farm households in the fifth income quintile.' See Kamiljon T. Akramov. (2009) *Decentralization, Agricultural Services and Determinants of Input Use in Nigeria*. IFPRI.

²³ R. Babatunde, A. Adejobi and S. Fakayode. (2010) *Income and Calorie Intake among Farming Households in Rural Nigeria*.

²⁴ In early 2011 ₦3,750 was the price of a 50kg bag of fertiliser diverted from the government subsidy scheme and resold on the open market – the norm at the time. PrOpCom (2011a).

²⁵ Banful, A.B., E. Nknonya and V. Oboh. (2010) *Constraints to Fertiliser Use in Nigeria*. IFPRI.

²⁶ FEPSAN, November 2010 presentation; data validated using World Bank, Food and Agriculture Organization (FAO) and IFPRI sources.

²⁷ FEPSAN, November 2010 presentation.

²⁸ Based on an average price per 50kg bag of ₦4,400.

²⁹ Banful *et al.* (2010)

³⁰ [PrOpCom. \(2011b\) A Fertile Alternative: Farmers' Perspectives on Nigeria's Fertiliser Market. Video.](#)

³¹ Cited in Vincent A. Yusuf, 'N776bn Fertiliser Subsidy Lost To Fraud In 30 Years', *The Daily Trust*, 03/10/13.

³² Based on a best-guess estimate from a TAK Agro project manager, not on official sales records.

³³ Recent research has shown that each kilogramme of subsidised fertiliser supplied reduced demand for commercial fertiliser by 0.19-0.35kg. See *Takeshima et al.* (2012).

³⁴ Risk is an important factor in fertiliser suppliers' decisions. This situation is exacerbated by the dependence of many suppliers on imports, especially for NPK fertilisers. Importing a shipment means buying 10,000-30,000 tonnes of fertiliser. In contrast, buying a truckload of fertiliser domestically implies a 30 tonne investment.

³⁵ IFPRI (2010) *Constraints to Fertiliser Use in Nigeria*; Madukwe, Michael C. (2008) *Practice without policy: The Nigerian Agricultural Extension Service*.

³⁶ IFPRI (2010).

³⁷ IFPRI (2009) *Constraints to Increasing Agricultural Productivity in Nigeria*.

³⁸ This chapter draws heavily on PrOpCom (2011a) and Bester, Hennie, Sam Unom and Alex Duncan. (2011) *Nigeria Propcom Project Completion Report*. UK Department for International Development. Rather than referencing each point, the authors would like to acknowledge their contribution here.

³⁹ Notore's Vision is 'To be the No 1 company by market share and profitability in our chosen businesses and a significant contributor to the development of Africa. Notore's Mission is 'To enhance the quality of life.'

⁴⁰ 'NPK' refers to a fertiliser which contains nitrogen, phosphorus and potassium. In Nigeria farmers usually apply it when planting their crops, or shortly after. Among other things, NPK aids root development. Urea fertiliser contains nitrogen only (but in higher concentrations than 'NPK'). It is often used two to three weeks after planting. Urea primarily improves plants' aerial growth.

⁴¹ Based on interviews with thirty-nine VPs in six northern states in October and November 2013.

⁴² At the time, 50kg bags sold for ₦4,200 – 4,400.

⁴³ Bester *et al* (2011), p. 59.

⁴⁴ PrOpCom had co-funded Notore's business model design and VP training costs.

⁴⁵ When comparing how much Notore sold during its pilots to the size of grant Notore distributors received from PrOpCom in exchange for VPs demonstrating to farmers how to use fertiliser.

⁴⁶ The analysis took into account other variables such as crop and planting techniques.

⁴⁷ [PrOpCom. \(2011b\).](#)

⁴⁸ Notore's 2012 sales show a similar trend: 89% of sales were in northern states.

⁴⁹ Existing urea producers Notore and TAK are expanding their production capacity. New

investors such as Dangote, Indorama and Green Petrochemical Company are building large new fertiliser production facilities. This boom is partly spurred by attractively priced gas concessions. Growing demand for fertiliser globally may also have incentivised this wave of investment.

Regarding the latter, see [Terazono, Emiko and Jack Farchy. 'Fertiliser sales soar as farm product prices surge.' *The Financial Times* website. January 5, 2012 \(requires subscription\)](#). Whilst some of the extra fertiliser produced will be exported, there are also plans to sell some domestically. For example, Aliko Dangote told journalists that his new plant would make Nigeria 'self-sufficient in fertilizer production and even have the capacity to export.' See [Onu, Emele. 'Dangote Group Plans to Build Africa's Biggest Fertilizer Plant in Nigeria', *Bloomberg* website](#).

⁵⁰ Comments at the seminar *Nigeria Fertiliser Market – Learning from Experience*, October 2012.

⁵¹ For more information on the pilot, see [PMK \(2013\) *Vaccine sales save poor farmers' poultry*](#).

⁵² In northern Nigeria, around three quarters of VPs' fertiliser sales are during the rainy season. Based on interviews with thirty-nine VPs in six northern states in October and November 2013.

⁵³ Newcastle Disease is a contagious disease which can kill birds. A 2006 study found that it caused 60% of deaths in rural chickens in Nigeria. Cited in Adene, D. F. and Oguntade, *The structure and importance of the commercial and village based poultry industry in Nigeria*. FAO, p. 19.

⁵⁴ ProCom staff made assumptions about independent replication which were supported, with '70-90% confidence', by the authors of ProCom's Project Completion Review. See Bester *et al* (2011).

⁵⁵ In Nigeria, many poor farmers cultivate two hectares or more. Considering that South African farmers on average employ 50kg/ha of fertiliser, and that northern Nigeria farmers often farm less fertile soil, many of the latter would profit by using at least two 50kg bags of fertiliser per season. This causes what PMK staff call 'graduation'. New customers often buy 1kg or 10kg packs. These small packs' affordability reduces the risk of experimenting with high-quality fertiliser. If the farmer is pleased with the results, she or he usually buys larger volumes in future. As 50kg bags offer better value per kilogram, farmers often switch from small packs to 50kg bags. A PMK survey of 96 farmers and 8 VPs confirmed this trend. The same study also found, however, that

52% of farmers lack enough money to buy their desired quantity of fertiliser.

⁵⁶ *Nigeria Fertiliser Market – Learning from Experience: what do we agree for the future?* Communiqué from meeting, October 2012.

⁵⁷ Michael Porter. 'The Five Competitive Forces That Shape Strategy', in Harvard Business Review. (2011) *On Strategy*, p. 61.

⁵⁸ Crowding in means entering a market in response to a change in that market, which increases its perceived attractiveness. Here it refers to PMK encouraging Springfield Agro to copy elements of the rural marketing model which Propcom helped Notore to pilot.

⁵⁹ This may be because village agents only received materials for one demonstration.

⁶⁰ Propcom Mai-karfi. (2012) *Study On Fertilizer Supply By The Private Sector In Adamawa State*.

⁶¹ FEPSAN (2013) *Assessment Report of the Generic GESS*, p. 15. Prices varied depending on how much subsidy state governments contributed.

⁶² The Federal Government subsidises 25% of the fertiliser's price. State governments, particularly those in the north, give additional subsidies of between 25% and 40%. Dayo Aiyetan and Habeeb Pindinga. (2013) 'Naija Fertiliser Subsidy'. *Naija Fertiliser Subsidy* website.

⁶³ IFDC. (2013) 'Nigeria Sets Stage for Agricultural Revolution', *IFDC website*.

⁶⁴ According to NBS *et al*. (2009), there are 14m farmers in Nigeria. Access to subsidised fertiliser would therefore appear to have risen from 11% under the old scheme to 32% in 2013.

⁶⁵ In a 2013 Propcom Mai-karfi commissioned survey, 83% of Notore customers said that they would still buy Notore even if they had access to subsidised fertiliser. For 70% of loyal customers, this is because they perceive Notore's fertiliser as better quality than the subsidised fertiliser.

⁶⁶ At the time of writing, GESS' logistical weaknesses include the following. Some of those registered with the scheme are not really farmers. Some farmers that receive vouchers are unable to use them; every time they visit a collection point, they are told that their allocated fertiliser is unavailable. Fertiliser intended for registered farmers is sometimes sold to traders or other farmers with fake vouchers. Even among farmers that do buy the subsidised fertiliser, not all use it. Many resell it shortly afterwards. Registered farmers who do wish to use the subsidised fertiliser have often been prevented from doing so by its late arrival. Some state governments are choosing agro-dealers based on politics or

patronage, not ability. See Dayo Aiyetan and Habeeb I. Pindinga. 'Fertiliser Subsidy: How Nigeria short changes farmers.' *Daily Trust*, 03/10/13, p. 33; FMARD website; FEPSAN (2013).

⁶⁷ S. Laker and L. Vaughan. (2013) *GES Workshop – CHYP Review*.

⁶⁸ Unpublished reports by civil society organisations.

⁶⁹ Dayo Aiyetan and Habeeb Pindinga. (2013) 'Naija Fertiliser Subsidy', *Naija Fertiliser Subsidy* website.

⁷⁰ The year-on-year sales comparison is based on 2011 and 2012 sales between January and October; this is the data which the authors have. Between January-October 2011, 4,044 tonnes were sold. Between January-October 2012, 4,926 tonnes were sold. Very little fertiliser is sold between October and December.

⁷¹ Northern Nigerian farmers also accounted for 66% of attendees at on-farm demonstrations.

⁷² 249,000 farmers attended VPs' on-farm demonstrations in 2012; 121,000 did in 2011. It is reasonable to assume that the number of farmers VPs educated elsewhere also rose.

⁷³ In a 2013 survey of 96 Notore customers, 30% of respondents cited VPs' demonstrations, promotions or advice as the main reason for buying a Notore small pack for the first time. 15% cited the desire to experiment, 13% affordability, 11% portability, 9% copying neighbours, 9% packaging and 12% other factors.

⁷⁴ For example, VPs teach the placement of small doses of fertiliser deep in the soil, close to the emerging roots of the plant. This practice increases yields more effectively and cheaply than using no fertiliser or broadcasting it.

⁷⁵ A few distributors helped to ease stock shortages, however, by buying subsidised fertiliser from farmers who preferred selling it to using it, and selling it to VPs and others.

⁷⁶ Analysis by Propcom Mai-karfi, based on a survey of 2,977 farmers in Notore's target areas.

⁷⁷ Nor can the rapid acceleration of farmer education outreach be explained by the effects of other donor support, either to Notore or directly to farmers. Whilst Notore has partnered with IFDC to conduct fertiliser demonstrations, these targeted larger farmers, who were not among those interviewed in PMK's impact research. Meanwhile, less than 1% of the farmers interviewed in PMK's outreach survey had learned good agricultural practices from other development programmes.

⁷⁸ The programme's impact assessment excludes farmers who buy only 50kg bags of fertiliser, and those who claim to buy more than 200kg of fertiliser. Wealthier farmers are unlikely to be interested in buying 1kg or 10kg packs of fertiliser.

⁷⁹ An anthropometric and retrospective mortality survey was conducted in eight states of northern Nigeria in 2012. 7,186 children under-five and 6,098 women were interviewed. The prevalence of stunting in children under five ranged from 41.5% in Kebbi to 60.2% in Jigawa. See NBS. *Summary Findings of Cross-Sectional Nutrition Survey, Northern Nigeria, February 2012*.

⁸⁰ Based on a randomly chosen sample of 31 users and 16 non user farmers. Non users were from the same communities as users. Only farmers growing the same crops, and with similar landholdings were included. Springfield Agro customers increasing their incomes more than Notore users (in a separate survey) is probably due to 40% of the Springfield Agro customers surveyed buying both fertiliser and seeds. The Notore customers surveyed only bought fertiliser.

⁸¹ In October and November 2013, 72% of the thirty-nine VPs interviewed in six northern states employed a paid, part-time assistant.

⁸² One study found that in northern Nigeria, 19% of women are farmers, compared with 50% of men. NBS. *Gender Dimensions to Livelihoods in Nigeria*.

⁸³ Across northern Nigeria, female farmers made up 17% of Notore small pack buyers and 15% of the Notore small packs buyers who adopted at least two good practices. Across Nigeria, 18.5% of attendees at Notore's on-farm demonstrations were female. At 19%, a similar percentage of farmers who accessed inputs via GESS in 2013 were female, according to the retailers surveyed for FEPSAN (2013), p. 24.

⁸⁴ In northern Nigeria, only 6% of women are farmers. See DFID. (2012) *Propcom Mai-karfi: A rural market development programme for northern Nigeria*. Business Case.

⁸⁵ Springfield Agro village agents also recall selling fertiliser and seeds to women during the PM-supported pilot. If Springfield Agro scales up its rural marketing, PMK will measure more precisely how many women benefit, and how much.

⁸⁶ Such women often miss out on the farmer education that accompanies VPs sales. Their relatives are often less willing or able to learn, or fail to pass on key lessons.

⁸⁷ In 2014 PMK is giving Notore technical assistance to pilot innovations which would allow the VP model to use less management time,

although Notore does not need help in selling or promoting fertiliser.

⁸⁸ Notore's Mission is 'To enhance the quality of life.'

⁸⁹ USP stands for 'unique selling point'. It refers to what makes a brand different, i.e. something that a customer values about one particular brand, which other brands cannot easily copy.

⁹⁰ Details of the awards that Notore has won can be found on the company's website, www.notore.com.

⁹¹ Crusoe Osagie (2013) 'FG Commends Notore's Support for Green Revolution', *This Day* website; Mfonobong Nsehe (2011) 'Africa's Most Outstanding Companies: Notore Chemical Industries', *Forbes* website; (2012) 'Notore and the Pursuit of Sustainable Food Security', *This Day*.

⁹² [Terazono, Emiko and Jack Farchy. 'Fertiliser sales soar as farm product prices surge.' The Financial Times online. January 5, 2012 \(subscription required\).](#)

⁹³ Seed company executives indicate that farmers are willing to pay for certified seeds, when they trust that the investment is worthwhile. See Aline O'Connor Funk. *PASS Trip Report*. Accra: Program for Africa's Seed Systems.

If fertiliser prices rise further, the good practices which VPs teach will become even more important to farmers continuing to get a good return on investment in fertiliser. Farmers would thus be likely to value Notore's farmer education, and associated products, even more. VPs teach farmers the correct doses, and how to apply fertiliser in the best location at the optimum time to simulate maximum yield response.

⁹⁴ [FMARD \(2013\) FMARD website.](#)

⁹⁵ ₦140 was, at the time of writing, the retail price for a 1kg pack of Notore urea fertiliser in 2013.

⁹⁶ Unlike farmers who 'graduate' to subsidised or open-market 50kg bags after experimenting with small doses, such women may be long-term customers for small pack sellers.