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**EMERGING DEVELOPMENT-RELEVANT ENTERPRISES IN KENYA:
DO THEY EXIST, WHAT DO THEY LOOK LIKE AND WHAT IS THEIR
ROLE IN POVERTY ALLEVIATION?**

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EMERGING DEVELOPMENT-RELEVANT ENTERPRISES IN KENYA: WHAT DO THEY LOOK LIKE AND WHAT IS THEIR ROLE IN POVERTY ALLEVIATION?

Andrew O. Adwera¹

Abstract

This paper explores emerging development-relevant business models in Kenya — organisations that appear to occupy a niche that sits between mainstream for-profit enterprises and the developmental activities of government programmes, NGOs and development projects. These organisations exhibit a kind of entrepreneurship that blends market-oriented goals with an underlying mission statement that seeks to serve the needs of the poor. This mapping paper sets out to identify some of these organisations in Kenya and explores their potential for putting research into use or facilitating this process. The paper also examines new sources of funding for this niche social entrepreneurial activity — from traditional donors, venture capitalists, philanthropists, challenge funds, hedge funds, etc., — that are convinced that solutions to poverty are being generated by entrepreneurs operating at various levels in society. The paper concludes that these new organisational models are already contributing to ‘disruptions’ in the market in terms of the way of doing business. And, in turn, this has repercussions on the institutional and policy landscapes in which these models operate.

Key words: Research Into Use, Agricultural Research, Innovation, Policy, Development Relevant Enterprises, Bottom of the Pyramid, Hybrid Enterprises, Kenya

JEL Codes: N5, N57, O13, O19, O22, O31, O32, O33, O38, O55, Q13, Q16

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LIST OF ACRONYMS

BOP	-	Bottom of the Pyramid
CGIAR	-	Consultative Group for International Agricultural Research
CRT	-	Central Research Team
DFID	-	Department for International Development
EAC	-	East African Community
FAO	-	The United Nations Food and Agriculture Organization
GoK	-	Government of Kenya
IFC	-	International Finance Corporation
IPM	-	Integrated Pest Management
LINK	-	Learning INnovation Knowledge
MDGs	-	Millennium Development Goals
M-PESA	-	Mobile Pesa (Money in Kiswahili)
NGO	-	Non-Governmental Organisation
R&D	-	Research and Development
RIU	-	Research Into Use
RNRRS	-	Renewable Natural Resources Research Strategy
S&T	-	Science and Technology
UK	-	United Kingdom
UN	-	United Nations
UNDP	-	United Nations Development Program
USA	-	United States of America

1. INTRODUCTION

The Research Into Use (RIU) programme — funded by the UK’s Department for International Development — has been experimenting with supporting organisations that blend entrepreneurial skills and perspectives with mission statements that seek to both serve the needs of poor customers and address their welfare (Hall et al., 2010). Some are market-oriented and others more socially-oriented; others are, often, a combination of the two. This mapping paper terms them as development-relevant enterprises and explores the diversity of these organisations and the extent to which they put research into use.

Kenya, like its neighbors within the East African Community (EAC), is experiencing rapid shifts in the way in which research is organised and put into use. It is witnessing a mushrooming of new kinds of agencies (some of which are discussed in this paper) in the form of private companies that are working on products aimed at improving the livelihoods of poor small-scale farmers. Other new and emerging forms of organisational arrangements have emanated from large organisations that have traditionally focused on higher-end consumers but have recently started changed their focus toward resource-poor clients by repackaging their products. This paper also provides examples of these.

The paper has been put together through a desk literature review informed by ongoing work within the RIU portfolio and beyond, followed by telephone interviews with related actors and face-to-face informal interviews with individuals and organisations.

Most of the more traditional organisations featured in this paper have historically focused their products and services at the rich while dismissing the market potential of the poor. However, as we discover, all this is rapidly changing, with the emergence of new types of organisations (both newly created ones and existing ones changing their modus operandi). Many of these

organisations have been formed by a coalition of public sector actors, non-governmental agencies and the private sector, all bonded by a sense of social entrepreneurship operating within the existing infrastructure. The emerging development-relevant enterprises are working at marketing agricultural products to small-scale, resource-poor farmers in East Africa (Hall et al., 2010).

The remainder of the paper is organised as follows: The next two sections set the scene for the rest of the paper, touching upon the general debates around the approach to innovation as pursued by these enterprises and presenting the context they operate in. Section 4 presents issues surrounding the 'bottom of the pyramid' market in Kenya. Section 5 presents case studies of development-relevant enterprises examined for the purpose of this paper, and this is followed by a discussion of the common features among these. The discussion section examines the concept of disruptions and how this is slowly taking place among the organisations discussed. It goes further to show why the disruptive aspects are important as far as policy influence and change are concerned. The conclusion examines RIU's role in getting research into use and its ability to influence or change policy at the national scale and, in turn, have a positive influence on poor farmers in Africa.

2. INNOVATION: SETTING THE SCENE

In recent years innovation has been viewed as a process of using ideas creatively to generate wealth and social welfare (Juma and Lee, 2005). However, developing economies still face the challenge of finding ways of harnessing innovation to meet the aspirations of their societies — concerns over health, food, education, employment and social development. International development assistance and national development planning has historically addressed these aspirations through investments in infrastructure development, provision of subsidised goods and services and training and human capacity development.

This way of thinking about innovation has informed development practice in most sectors, but notably agriculture. The sector was and remains the largest sector in many countries in terms of employment and public agricultural research and input supply regimes have been key policy tools in sector development. The track record of such thinking has, at best, been mixed and at worst counter-productive, involving negative social equity and environmental consequences. Consequently food security at both the household and national level still remains a serious challenge for many countries, particularly in Africa. Climate change adds further challenges to the sector and makes the search for new and more effective modes of innovation ever more urgent.

This supply-driven notion of innovation has also informed industrial development and public health policies, although more emphasis was given to importing technology, equipment and drugs as research and manufacturing infrastructure was limited. Even in countries where industrial research and manufacturing facilities did exist (for example the Indian and South African pharmaceutical sectors) products and services tended to be aimed at the non-poor. This is part of a wider trend in which developing economies became connected into global value chains. This helped provide access to global technology, expertise and intelligence on international patterns of demand and norms and standards in distant markets. This process continues to drive product and marketing innovation. However, the patterns of governance of

this value chain mean that products and services were aimed at high value markets and distributed most benefits to corporate scale enterprises

In recent years there has been a shift in the application of concepts around innovation from the way they were generally articulated in industrialised nations to the way they are being practised in developing economies such as Kenya, particularly by private enterprises. Recent investments by international donors, including DFID, in private business models in East Africa, that view the poor as a market, motivates the need to write this mapping paper.

3. ACTORS AND THEIR CHANGING ROLES IN RESPONDING TO POVERTY CHALLENGES IN KENYA

Rising poverty statistics in Kenya continue to pose challenges despite the numerous development strategies and plans put in place by the national government over the past five decades (G.o.K, 2000a; Juma and Lee, 2005). The statistics point to the fact the number of poor people, especially in Africa, is still rising, despite huge investments in programmes to eradicate poverty. Of course, there are a number of complex contributing factors to poverty, which this paper will not attempt to go into, but this context is important in order to understand the motivation driving several of the emerging hybrid organisations that identify opportunities that address social challenges while exploiting market gain.

Poverty in Kenya has been attributed to a number of factors, including unemployment, lack of assets, lack of credit, inaccessible markets, corruption, poor health, illiteracy, insecurity and economic shocks. This means that it is a multi-dimensional phenomenon going beyond the general lack of income and has led to high vulnerability arising from the interactions of economic, political and social processes (World Bank, 2000). Historically in Kenya the public sector, together with development partners, has implemented programmes that respond to poverty challenges in the country. Given the dependence of Kenya on agriculture, the government and donors have made huge investments in the past research with relevance to food security (UNDP, 2009). Efforts by the Kenyan government at poverty alleviation still continue; take, for instance, its latest strategy, known as 'Vision 2030', which aims to accelerate Kenya's industrialisation in the next decade and a half. However, the challenges are immense and progress toward achieving the Millennium Development Goals (MDGs) is slow.

The challenges do not seem to have deterred efforts by relevant actors, led by government, in continued support for programmes that address the issue of poverty. The situation, however, also witnessed the opening of space for new actors, either individually or as coalitions of organisations that we characterise as having hybrid characteristics of both a private business

and development nature. These organisations view the poor in terms of market opportunities rather than challenges.

An important distinction to note here is that this activity is not corporate social responsibility. Rather, these organisations are defined by an altogether new type of business model that is blending entrepreneurial skills and perspectives with mission statements that seek to both serve the needs of poor customers and address their welfare (Hall et al, 2010).

The strength of this new approach is, in part, drawn from the entrepreneurial skills of the established private sector actors who have a good understanding of how the market works and apply this experience to a previously untapped market of the poor (Hall et al., 2010; Prahalad, 2004). However, this argument has been criticised by development scholars for being naïve as far as sustainability is concerned. Arora and Romjin (2009) have argued that the ‘bottom of the pyramid’ argument obscures the complexity and heterogeneity of the large market of poor consumers. They also caution that there is not even much evidence of this ‘bottom of the pyramid market (see Hall et al., 2010). This paper does partly acknowledge this argument; however, it focuses on exploring the evidence that points to the existence of such enterprises in Kenya and does not delve into much more complex issues. It sets out to not only show the emergence of these enterprises but also outlines their features. It is an attempt to show that there is evidence of demand for products of innovation at the bottom of the pyramid and this is a reason why private sector companies are getting into partnerships with development actors, including communities of farmers and development groups, in order to get relevant research into use.

4. THE BOTTOM OF KENYA'S PYRAMID

The private sector in Kenya has long been dominated by well established, large organisations since post-colonial times. Post-independence Kenya was occupied with efforts to jumpstart the economy through plans geared at alleviating poverty and creating wealth. In the past four decades, poverty eradication has been a key mandate of the government, with support from development partners.

However, the past few years has seen a shift in attitudes in Kenya, with the rise of new hybrid organisations developing products and working at fighting poverty. These organisations are characterised by leadership from hitherto mainstream private companies that previously did not see the market potential of the poor. Another unique characteristic (discussed later on in this paper) is the element of partnership and loose coalitions among several development actors. These organisations are also emerging from sectors that previously had little to do with development-related activities in the country, such as finance and banking, telecommunication, environment and sanitation and insurance. In recent years proponents of the 'bottom of the pyramid' theory have argued that the decades ahead belong to companies that recognise the poor as a market rather than a problem — an argument with particular resonance in Africa, with more than a billion people at the base of the pyramid (Prahalad, 2004).

There is a growing literature looking at the role of hybrid enterprises in poverty alleviation. These enterprises have identified the poor as a potential market for their products. Bottom of the Pyramid advocates, such as Prahalad, talk about the “untold wealth generated by the world's four billion poorest people” (Prahalad, 2004). Mahajan (2009) talks specifically about the opportunities in Africa and provides examples of local companies that have flourished by meeting the needs of the many poor rather than a few rich.

The next section presents selected case studies of development-relevant hybrid enterprises in Kenya and discusses the particular challenges they aim to address.

5. CASE STUDIES: EMERGING DEVELOPMENT-RELEVANT ENTERPRISES IN KENYA

A. Cases outside the RIU Portfolio

j) Backback Farm Programme: Helping Build up Bottom of the Pyramid Value Chains with a Canvas Backpack

The Backpack Farm Programme is a stage-by-stage development enterprise designed to support the success and expansion of smallholder agricultural co-operatives. Backpack Farm — a for-profit social initiative with a few private sector companies as partners in the venture — supports eco-friendly farming practices among smallholder farmers in East Africa, and is working on enhancing bottom of the pyramid value chains. The programme targets the production models of millions of farmers by providing them with a simple canvas backpack filled with agricultural inputs and follows this up with services that include assessments, training, and monitoring and market development. Contained in one backpack are all the necessary materials to get started in farming, including seeds of drought-resistant and local crop varieties, a drip irrigation kit, and a 500-liter collapsible water tank. The all-in-one backpack costs about \$5,000.

A partner in the programme from the private sector, Lachlan Kenya, designed a “fusion farming” model to tackle the problem of weak production rates. Included in the backpack, this “model” consists of a combination of biological products, botanicals and reduced toxicity pesticides, as well as small farm tools (customised to the crop production model) and a six liter chemical sprayer along with training manuals and a journal.

Farmers (generally in cooperatives) are sold the backpack together with lessons on how to use the contents. The goal is that farmers will ultimately start growing food in a more ecologically sustained way, but yet with better rates of production. By eliminating the need for traditional fertilisers that damage soil and water tables and distributing a cost effective drip irrigation system and training on green water management (rainwater collection) techniques, the

Backpack Farm model aims at shifting traditional mindsets about how to develop the rural economy in Kenya and enhance food security by empowering rural farmers with access to markets.

ii) Microhealth: Innovation around Rural Health Services in Kenya

Access to health services is a key factor for farmers in their pursuit of productive farming practice, and has larger consequences for Kenya's environment and food security. Access to health services remains instrumental in supporting livelihood strategies of poor farmers, and hence affordability is a critical issue.

The 2009 Kenyan census indicated that out of 38 million only 0.7 million citizens had health insurance, which was largely provided by employers. The masses of uninsured Kenyans largely rely on public sector facilities or traditional healers for basic treatment. With estimates of medical costs in Kenya rising by at least 20% annually over the past one year alone, this has meant a resulting spiraling upward in the prices of drugs and hospital equipment. In response, perhaps, to this situation, Kenya is also witnessing a mushrooming of new organisations that are devising innovative products around health that primarily target the poor.

Microhealth enterprises — often formed by a coalition of private sector and development actors and supported by donor funds — have now begun offering micro-health insurance cover to poor farmers. Examples of such initiatives include:

- **Changamka Microhealth Ltd.:** This private sector enterprise (<http://changamka.co.ke/pages.php?p=>) run by two individuals and supported, in part, by donor funds, offers several products aimed at the poor. Its 'Changamka' product enables members to access treatment at designated hospitals for as low as \$6 per visit. Changamka's products and services include a "Medical Smart Card" that is used to pay for medical treatment at pre-contracted prices; it does not expire and can be topped up through mobile money transfers.

- **Bima Yangu:** The Cooperative Insurance Company of Kenya and the National Hospital Insurance Fund joined forces to offer a comprehensive family insurance to uninsured Kenyans. Bima ya Jamii — or insurance for the family — encourages savings while providing risk cover
- **Afya Milele:** Afya Milele (<http://www.eagleafrica.co.ke/>), launched by Eagle Africa Insurance Brokers, caters for both inpatient and outpatient and costs \$0.44 per day. The product allows poor families to obtain cover for four members of the family at that cost per day. The cover pays for maternity costs, doctor's fee, daily hospital charges and drug prescriptions per day.

iii) Iko-Toilets: An Eco-toilet Enterprise for Kenya's Urban Poor

This initiative, pioneered by David Kuria, an environmental entrepreneur and social development advocate with vast experience in both the public and non-governmental sectors in the areas of planning and business development, is an environmentally-friendly, profitable business venture that aims to build high quality sanitation facilities in economically depressed areas. Around 60 percent of Kenyans in major cities live in depressing and dehumanising conditions in slums across the country, with no access to clean water, sanitation and waste disposal services.

In his previous career in the urban planning division Kuria began to appreciate the need for quality sanitation for those with had no access to it. While later working in an NGO he began to advocate for practical solutions to environmental challenges impacting on the poor. He lobbied NGOs and other actors to look for practical solutions to the problem of providing sanitation services, while at the same time insisting the problem be looked at as a viable and sustainable social business opportunity. Realising the project could only attract donor and financier interest if it was presented as such, Kuria developed a business proposal and used it to acquire matching funds from a venture capitalist (Acumen), who financed his initial request.

Kuria's Iko-Toilets (coined from 'eco') is a venture that creates high quality sanitation facilities accessible to the urban poor, by connecting sanitation as part of the dignity of living in a poor, urban community — which is involved in the design, construction and management of the facilities. The venture first had to earn the help of local communities, and get them to agree to a commonly shared space for a public sanitation facility. Once community buy-in is earned, group meetings are held to come to a consensus on the toilet's design and to discuss how to get the resources for it. The eco-toilets are clean, well-designed and well-maintained facilities, with piped music and warm showers amongst other amenities offered at an affordable price (about \$0.5 per visit). Kuria also offered monthly voucher payment systems. Apart from the many necessary services, other services offered include: shoe shining ventures stationed right outside, a newspaper vendor and a telephone booth. The community feels a sense of ownership for the facility and takes up the responsibility of collecting fees and maintaining the toilets. Kuria has also managed to rope in a telecommunication company and a real estate company to subsidise costs by letting them use the toilets as advertisement spaces.

The initiative has attracted widespread interest from both donors, the financing sector and local government, which are keen on new and effective mechanisms of service delivery to rising numbers of urban slum dwellers.

iv) Mobile Cash Transfers: Helping Poor Farmers Benefit from Telecommunication Innovations

Communication plays a key role in enabling the poor have access to goods that have relevance to their needs. There is evidence that high levels of poverty are accelerated partly due to high costs associated with communication and resource transfer. The opening up of markets in Kenya has enabled transnational communications companies, including Vodafone-UK, Orange, Yu and Airtel, to work with local Kenyan partners. Increased competition has given rise to a need to innovate and address the challenges faced by clients at the bottom of the pyramid.

These companies (examples include Zain, Safaricom and Yu) have started developing products that target the poor while demonstrating that this does not interfere with the operations of

core business principles. Several companies have also formed new and innovative arrangements and loose coalitions with other actors, such as private seed and fertiliser companies and development organisations, in order to deliver services, including mobile cash transfers, to poor customers. Mobile cash transfers, for instance, have enabled resource-poor farmers to purchase agricultural farm inputs such as seeds, fertilisers, etc. Contract farmers are also able to receive quick payments for their produce.

Safaricom, a Vodafone partner, has developed a number of products targeting the poor, including M-PESA (M stands for mobile, Pesa is Swahili for money), which helps poor farmers make low cost payments to purchase seeds, fertilisers and other inputs. M-PESA, which was initially funded by DFID, was initially conceptualised as a service to enable microfinance borrowers to conveniently receive and repay loans using Safaricom airtime resellers and to then, in turn, offer more competitive loans to users as a result of reduced costs in dealing with cash. However, when complications arose with initial partners, the service relaunched as a way to send remittances home and make payments.

M-PESA is, in essence, a branchless banking service, which only requires one to be a subscriber and register personal identification details. M-PESA clients can transfer cash at very low costs, thereby cutting down on the drudgery and expenses previously associated with various activities (for example, long distance travel by bus or use of postal services to send cash). The latest service in mobile banking is called MKESHO, offered in partnership with Equity Bank. All clients require is an active MPESA account through which they can deposit cash from M-PESA to an equity account for saving at an affordable cost. Equity Bank opens these accounts free of charge to customers.

v) Equity Bank: Banking on and for the Poor in Kenya

There are a number of initiatives that focus on financial services for the poor, including and going beyond the traditional microfinance model. Their products range from access to free or affordable banking services, access to credit facilities, including loans that are repayable at

affordable interest rates and flexible repayment periods, etc. This case study involves Equity Bank, a local bank that has focused on products specifically aimed at addressing the needs of the poor through unique partnerships with public, private and civil society actors. The bank's strong point is its "accessible, affordable and flexible service provision".

Equity Bank (<http://www.equitybank.co.ke/about.php?subcat=7>) began operating in 1984, starting off as a building society and microfinance organisation and surviving a decade-long slump in the banking sector, before evolving into a commercial bank. At a time when there was no 'bottom of the pyramid bank', Equity Bank's senior management was quick to realise the need for and opportunity in catering to the needs of millions of poor Kenyans who wanted to save and borrow money but had nowhere to go. While absolute poverty in Kenya has declined in recent years, inequality has remained high. Currently Kenya's population of approximately 37 million people has an average per capita income of US \$580. By 2003, as the economy picked up, Equity Bank gained 256,000 account holders. At present it has 100 branches across the country and 500 automatic teller machines (ATMs). The bank's armored trucks go into rural areas so that the people can receive cash. While traditional banks require pay slips and utility bills as proof of a person's address before letting them open an account, and charge high monthly fees, Equity only requires an identity card. Within just one year, the bank saw the number of account holders jump to 600,000. The majority of its clients save around US \$148 in their savings accounts. The bank's microcredit operation makes loans of less than US \$7 and gives borrowers a few months to repay them. The bank claims loan defaults are less than 3 percent on 600,000 outstanding loans — compared to an industry average of 15 percent. It keeps transaction costs down by using the latest in information technology. In 2007 the bank earned pre-tax profits of more than US \$40 million. The bank's success with the bottom of the pyramid segment has inspired other mainstream banks and financial organisations to enter the market.

vi) Kilimo Salama Plus: Insurance for Rain-Fed Agriculture

Kilimo Salama Plus (Kiswahili for safe farming), is an innovative insurance product emerging out of a unique partnership between an insurance company (UAP Insurance, <http://www.uapkenya.com/>), a foundation linked to an international agribusiness company (Syngenta Foundation, <http://www.syngentafoundation.org/>), and a mobile operator (Safaricom, <http://www.safaricom.co.ke/index.php?id=353>). The initiative, supported by the International Finance Corporation (IFC) and Syngenta Foundation, is a crop insurance programme that aims to cover the expected value of farm harvests against natural disasters while also protecting against livestock losses.

In its earlier incarnation, Kilimo Salama was a pay-as-you-plant insurance programme for Kenyan farmers to insure their farm inputs against drought and excess rain, by using a low-cost mobile phone payment and data system linked to solar powered weather stations to issue insurance policies and rapidly compensate farmers for investments in seeds, fertiliser, and other inputs that are lost due to either insufficient or excessive rains.

With the launch of Kilimo Salama Plus, the programme has expanded its initial focus to go beyond simple inputs to allow farmers to insure a wide array of crops, including maize, wheat, beans and sorghum. Farmers can buy Kilimo Salama Plus through local agro-dealers, who use a camera phone to scan a special bar code that sends the policy to the insurance company UAP over Safaricom's mobile data network. The application, developed by Syngenta Foundation, sends a text message to the farmer's mobile phone confirming the insurance policy.

Payouts are determined by data collected through 30 weather stations in the targeted regions that have been renovated with automated, solar-powered systems capable of broadcasting regular updates on weather conditions and rainfall quantities occurring near individual farms. When data from a particular station, which is transmitted over Safaricom's 3G data network, indicates that drought or other extreme conditions (including excessive rains) are destined to reduce yields, all farmers registered with that station automatically receive payouts.

The payments are sent directly to a farmer's mobile phone via Safaricom's M-PESA mobile money transfer service (see previous case study). Using M-PESA combined with the automated weather stations allows farmers to quickly collect payouts with virtually no claims process and no need for an agent to visit the farm to confirm losses.

Good weather means that insurance payouts are low or none at all. Whenever a season is projected as going to be poor, farmers are encouraged to insure to protect themselves against the risk. The insurance company is funded to subsidise costs to farmers. Although the company makes minimal profits, the model has proven sustainable because of the numbers.

B. RIU Best Bet Case Studies

i) Real IPM: Stopping Striga and Increasing Yield

Real IPM developed as a response to an emerging market for bio-control systems in the horticulture and flower export sector (Hall et al., 2010). The company has developed a business model that blends conventional revenues for its expert services and bio-control products with development assistance money, often through challenge funds, in order to develop products and services that can be sold to small-scale producers.

The Real IPM Company (<http://www.realipm.com/aboutus.asp>) is a Kenya-based company established in 2004 to commercialise biological control pest agents for the horticultural industry. Its origins can be traced back to 2000, when Kenya's largest horticultural and floriculture exporter, the Flamingo Holdings Group (better known as Homegrown Company), established Dudutech as a subsidiary to develop biological controls systems to reduce pesticide use in the horticulture/ floricultural sector. Dudutech was established as a response to regulatory issues in its major market of Europe; there was a both a need to reduce pesticide residues, but also human rights issues associated with exposing workers to these during application. The company's first major success was the development of a control agent spider

mite in roses with the use of *Phytoseiulus persimilis* (a predatory mite of red spider mite). Bio-control systems for this and other pests are now widely used in the industry.

The company aims to offer practical, sustainable and affordable reductions in pesticide use for both large-scale commercial growers and small-scale subsistence farmers throughout Africa and elsewhere. The focus of its activities under RIU is the promotion of an already developed bio-pesticide to control *Striga* and the use of seed priming. *Striga* is a parasitic weed that causes significant loss of yield in maize, sorghum and millet in western Kenya. For instance, more than 80,000 ha of maize is reported to be affected in Kenya alone. *Striga* can reduce yield by 80%.

Amongst resource-poor farmers the practice of farm-saved seed for maize, sorghum and millet is widespread. However, this seed be of poor physical quality as a result of sub-optimal production practices and storage conditions; consequently, poor germination and low crop establishment are common and contribute to low yields. Weak plants are also more susceptible to *Striga* attack. To date, agribusinesses and investors have avoided working in the *Striga*-infested maize producing areas of western Kenya. This is because *Striga* infestation is seen as such a major risk factor in developing commercially-led approaches to introduce new seed varieties or fertiliser inputs.

Real IPM hopes to tackle this problem by working with small-scale farmers to bulk up their own seeds. The company aims to increase productivity in two ways:

- Using a mycoherbicide to control *Striga*
- Encouraging seed priming through the adoption of Gro-Plus (a phosphorus-based nutrient additive)

By integrating these techniques significant increases in yields are expected. This will be supported by:

- 100 field workers from national programmes such as NGOs trained in the technologies involved and supported with information and advice
- Promoting technologies (StopStriga and Gro-Plus) through radio programmes, and advertising and communication via an SMS messaging service, together with additional promotional activities such as demonstration plots, leaflets, posters and stands at agricultural shows
- An SMS database of 48,000 participants
- Supporting farmers in three successive waves of planting in Nyanza Province by distributing small-scale technology packs (StopStriga and Gro-Plus) to 48,000 farmer households

The technology in StopStriga consists of a simple double treatment. Initially the seed is soaked overnight (seed priming) in a weak phosphorous solution (when marketed separately this is called Gro-Plus). Soluble nutrients are pre-measured and included in the pack, which is sufficient to treat 1 kg of seed. This is a cost-effective way of delivering nutrients that are especially scarce in Africa's acidic and nutrient deficient soil. The following day the seed is treated with the mycroherbicide, which is formulated so that it sticks to the seed.

ii) CABI and EcoAgriConsult Initiative on Community-Based Control of Armyworm

This case involves a consortium of researchers, NGOs and government ministries that have joined forces to tackle a migratory pest, the African Army Worm (*Spodoptera exempta*) (Hall et al., 2010). What is notable here is the way CABI has been able to broker this consortium and the way it has been able to persuade government ministries in both Kenya and Tanzania to address the public good issues of migratory pest control in a novel way. The novelty of the approach is that it (a) firstly, combines pest prediction with pest control (b) secondly, uses it to involve communities in these activities and (c) thirdly, mobilises the private sector to provide

pheromone traps for forecasting and bio-control agents. RIU is supporting market development through training and social marketing.

Swarms of armyworm, the caterpillars of a migratory moth (*Spodoptera exempta*), can have a devastating impact on crops and pasture. Large armies of black caterpillars suddenly appear, often catching farmers unaware; the migratory moths arrive en masse and lay billions of eggs in a few days. This results in the devastation of crops in the grass family, including staples such as maize, sorghum, millet, rice and wheat, as well as pasture. Outbreaks tend to occur during growing seasons following periods of drought and can have a devastating impact on food production. Moreover it is a problem that conventional extension services have a hard time dealing with, since by the time the outbreak has been recognised countervailing measures are relatively ineffective.

The community-based armyworm forecasting enables farmers to make forecasts for their own village with over 80% accuracy. The trap and pheromones are expected to cost \$14 a year. Community-based armyworm forecasting is a novel approach using technology already developed and validated in the field. Adult armyworm populations are monitored using a trap baited with a synthetic version of a female pheromone. Because the monitoring is done locally farmers have more time to prepare for control or to seek help. One forecasting tool can cover around 200 ha.

The consortium working on these initiatives actually started life as two separate consortia, one dealing with prediction and one dealing with control. Both consortia had long established partnerships built around a series of research projects developing the prediction and control approaches. The consortia have been expanded (and now merged) to involve both government agencies responsible for migratory pest control and the private sector as a source of diagnostic materials and control measures.

The case study's key characteristic is the creation of networked capacity for innovation among all relevant stakeholder groupings. The team works with suppliers to ensure that the forecasting pack (pheromone and trap) is made available to communities so that they can forecast invasions. One of the companies involved will also establish a facility for making the biopesticide SpexNPV. It is likely that the forecasting packs will be available before SpexNPV has been given usage permission by the regulatory authority, but in the short-term synthetic pesticides will be used in conjunction with the forecasting. Both products will need to be sold widely to be financially viable. The success of this initiative may, therefore, be dependent on expansion throughout East Africa.

6. COMMON FEATURES OF DEVELOPMENT-RELEVANT ENTERPRISES

The development-relevant enterprises studied for the purpose of this paper share distinct characteristics that identify them several others working in their field, which define their existence and approach used. It must be noted that not all the cases carry all these features, which include:

a) The poor as the primary market for products

Each of the enterprises discussed derives its motivation and purpose from the fact that it views the growing number of the poor as a sustainable market for its products. These enterprises either facilitate or themselves provide research products to the poor, who previously did not have access to them because of high costs. For example, the coalition promoting M-PESA has enabled millions of poor people to transfer cash through mobile technology. Another example is the Real IPM company that has developed a biopesticide that manages the 'striga weed', which devastates crops grown by poor farmers.

b) Application of business principles to solve development challenges

These enterprises adopt business principles and social entrepreneurial skills to create and distribute products. For instance, the coalitions around mobile cash transfers are focused on making a profit while at the same time tackling the problem of lack of market access, which is a challenge for poor farmers. The eco-toilet case uses business principles to tackle the problem of access to quality and environmentally-friendly sanitation services. Real IPM has been able to effectively address the problem of Striga, which affects poor farmers in western Kenya, through a sound business plan involving agro-vet stores that distribute its products.

c) Low-cost solutions

These enterprises have a specific target customer base: the poor. Hence their products and services needed to be designed to be affordable and accessible. This has meant that several of these enterprises were required to think outside the box from the very outset. In some cases

this has meant bringing down costs through unusual partnerships with unlikely bedfellows. The Real IPM Stop Striga initiative, the CABI-led African armyworm venture, and the Kilimo Salama Plus insurance product are cases in point. The larger vision to tackle a widespread problem has been balanced by a realisation that solutions need to be practical and sustainable, which means they have to be low-cost. These initiatives have discovered that sharing infrastructure, distribution systems, etc., is effective and can have greater impact. This is an entirely different way of thinking about how to get products and services to the poor.

d) Partnerships with the poor

Another critical ingredient for sustainability of innovations is that it requires community buy-in and partnerships. The feeling of ownership or being part of the solution is essential in sustaining these 'bottom of the pyramid' ventures. The M-PESA mobile cash transfer initiative, the eco-toilet venture, Real IPM and the African armyworm coalition have all partnered with local communities. The poor are, thus, viewed as both clients and part of the solution to a greater problem. This is a key factor in the success of these models.

e) Innovative funding sources and mechanisms

The development-relevant enterprises studied in the context of this paper have a diversity of funding sources and mechanisms that allow them to do what they do. One commonality is that the bottomline is serving the poor, even if it means minimal profit. New forms of funding observed include challenge funds (take, for example, the RIU Best Bet cases), partial funding from investors and venture capitalists (for example, the eco-toilet venture), and matching funds and grants from development organisations (who themselves part of the enterprise in many cases, such as in the Kilimo Salama Plus insurance case).

Table 1: Features of Development-Relevant Enterprises in Kenya

Categorisation	Features
<p>Origin</p>	<p>Development-relevant enterprises have emerged as a result of a number of reasons, with a major factor being the increasing numbers of poor people in low-income economies who lack basic services and necessities. For a long period of time, these economies were characterised by multi-national companies that targeted a premium market. Development-relevant enterprises, comprising entrepreneurs who work to address needs of the poor, have learned to exploit the opportunities and gaps involving a largely-unserved market. Real IPM, for instance, relied on its experience with export markets to identify a gap for a product that could save poor farmers millions of shillings in losses. CAB international, on the other hand, identified a gap in managing African Armyworm.</p>
<p>Nature of partnership</p>	<p>Several of these enterprises are characterised by new and unique forms of partnerships that focus on opportunities to get innovative products and services to the poor. A lot of these enterprises rely on partners in a loose coalition bringing their individual strengths and skills to the table for the success of the venture. The skills range from knowledge and expertise on business and development to the provision of a platform, including infrastructure, to make the particular product or service accessible to the poor. For instance, in the M-PESA case the mobile service provider Safaricom provided infrastructure services to deliver products at an affordable costs while the banking partner Equity Bank brought in its financial skills.</p>
<p>Personnel</p>	<p>The personnel in the enterprises tend to have business and entrepreneurial knowledge and skills that enable them to create and distribute products that have both social and market aspects. The actors in the loose coalitions have differing expertise, their collective business and social entrepreneurship skills drive the enterprise. All the while they may still need to continue to work on their core business or activity. For example, Real IPM still serves the upstream markets in Ghana for cocoa farmers even as it continues to focus on products for poor farmers in western Kenya. This means that organisations in a coalition require a multitude of different skills for different activities. Real IPM, for instance, has two business development teams while the CABI-led coalition has compensated for this by involving a private sector partner with entrepreneurship training skills.</p>
<p>Infrastructure</p>	<p>These enterprises have learned to exploit existing infrastructure as a way to get products and services to the poor while still maintaining low costs. For example, MPESA as a product has been used both as an inroad to accessing a range of farm products and inputs, while at the same time being used to facilitate payments both ways. The same product is also used by the Kilimo Salama Plus initiative to make cash payments to farmers on insurance compensations.</p>

Types of financing	<p>Financing in these development-relevant enterprises differs from conventional development funding arrangements. These enterprises have adopted business principles in accessing finance and use business plans to operationalise the same. They go beyond normal corporate social responsibility and work hand in hand with the poor to design products that respond to development challenges. Examples include the eco-toilet venture that uses matching funds from venture capital. The two RIU Best Bets used a challenge fund model while others have used grants from banks and communication companies to finance entrepreneurship activities that facilitate getting research into use.</p>
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7. DISCUSSION AND CONCLUSION

Several lessons emerge from this paper that point to the fact that the new development-relevant enterprises are playing a unique role in bringing public goods to the poor. This new role is, thus, slowly disrupting the policy landscape (Christensen, 1997) by filling in a gap that previously would have fallen in the purview of the public sector. They have also effected market disruptions by changing product design in order to cater to the bottom of the pyramid market — a previously uncatered-to segment of society.

These lessons are testimony to the fact that RIU's investments in such models in East Africa are not only timely, but also play an important role in poverty alleviation through resultant policy and institutional change.

The cases discussed in the paper also point to the fact that these new forms of arrangements, through a better understanding of the market, have managed to identify a hidden market within large numbers of the poor, thus changing conventional thinking around socially-relevant service delivery by public sector actors. Such enterprises are emerging in a number of different sectors, including agriculture, health, environment, financing, communication, etc., in East Africa. Apart from aiming for the profit bottomline, these enterprises have also managed to ensure that their activities are sustainable in the long-term by specifically designing low-cost innovations, thus confirming several 'bottom of the pyramid' scholars' views on sustainability (See Prahalad, 2004).

RIU's investments in the Best Bet projects come at a fitting time when the landscape of East Africa is rapidly changing. It has added to the empirical evidence on how such models will have future impact on the policy space (specifically within the agriculture sector). It is also providing lessons for how government ministries and international donors need to be looking at pro-poor investments. Of course, the onus now falls on the public sector in Kenya to take note of the

new and emerging arrangements, as well as the organisations that have figured out how to work with and for poorer communities while still chasing a profit.

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