

Emerging private extension and advisory service models in Kenya’s transforming agrifood sectors

Catherine W. Kilelu, Gerald Mutinda Katothya and Jan van der Lee



Background

This brief presents summary results of an assessment of four emerging market-led, private sector-delivered agricultural extension and advisory service (AEAS) models in the transforming Kenyan agrifood system. The assessment focused on the dairy and horticulture sectors. The aim of the research was to understand the design and operational features of the models: how they perform as agri-service enterprises, in contributing to farm improvements and equally develop as sustainable businesses.

The Kenyan AEAS system has evolved over time, moving from a public sector-dominated system to one that recognises plurality and diversity of actors, including private sector actors offering market-driven services (GoK 2012; Kilelu *et al.*, 2011; Muyanga & Jayne 2008). Private sector models seek to exploit the opportunities emerging in the transforming Kenyan agrifood system, which is characterised by growing urbanisation, shifting dietary patterns, increasing demand for more nutritious and safe food, and growing concerns for sustainable production. Consequently, value chain actors who wish to remain competitive and meet the shifting demands must continually innovate; as a result, production is becoming a knowledge-intensive and technologically dynamic occupation. Commercially oriented farmers must therefore seek out the requisite technical and managerial (innovation) support through AEAS. This is driving a market for private AEAS and opening opportunities for business and employment creation (Babu & Zhou, 2015; Kabasa *et al.*, 2015).

This brief presents the summary results of four case studies (Table 1), looking at the emergence, contribution and performance of these models. It also provides some reflections and recommendations.

Table 1. Overview of extension and advisory service models studied

Selected model	Model characteristics	Subsector focus
Mazao Safi	Independent (farm- enterprise focus)	Horticulture/industrial crops (avocado, macadamia, coffee)
Instaveg	Chain-embedded	Horticulture (export and domestic)
Perfometer	Independent	Dairy
NKCC	Chain-embedded	Dairy

Methodology

The multiple case study design assessed four models that were selected for their innovative character and spread across two model types – chain-embedded and independent – and across the dairy and horticulture/industrial crop sub-sectors. Data were collected in counties where the models were operational. It involved key informant interviews (n=22) and a farmer client household survey in all four case studies (n=144). Where available, secondary data for the cases were analysed, including business reports and data.

Key messages

- The diverse AEAS models that have emerged in the transforming Kenyan agrifood system are characterised by low advisor: farmer ratios offering personalised farm-level support. They vary in provision of complementary inputs and services, farmer targeting (mostly entrepreneurial farmers), and advisor profiles and roles.
- The models show mixed results in terms of service uptake, revenue generation/financing and outcomes for client farmers.
- There are gaps in developing clear structures for costing, financing and revenue-generation to demonstrate robust, sustainable business cases for market-led AEAS.
- ICT systems that improve farm-level data capture, analysis and feedback are not well integrated in the models.
- While the models do not explicitly target women and youth, some models report unintended positive outcomes in attracting these groups. However, some models exclude farmers of smaller holdings through their targeting criteria.

Recommendations

- Costing and sustainable revenue-generation structures need consideration in promoting private AEAS.
- For effective delivery of AEAS, the business models need to integrate ICT systems with analytics that inform clients’ decisions and support accountability to intended outcomes.
- Public-private partnerships can enable sustainable financing and support to grow effective inclusive AEAS models.
- Private and public actors should invest in advisor skills, business ecosystems development, regulations and financing.

Summary findings of the case studies

Mazao Safi extension and advisory services model

The business model

Mazao Safi (MS) is a subsidiary of TradeCare Africa (<https://www.tradecareafrica.com>), a social enterprise that uses knowledge from global value chains to invest in services that will transform smallholder farming in Africa. Established in 2017, MS promotes “access to extension services for small- and medium-scale commercial farmers through a composite decision support system, to increase productivity, quality and access to markets”. MS uses a farm-enterprise approach, targeting its services to multiple commercial crops grown by farmer clients. The MS extension and service delivery is guided by a methodology known as RASTA (**Figure 1**) that uses continuous farm data collection and analysis to support improvement decisions. Its operations and service delivery are characterised by a hub-and-spoke model, with an office and agri-input store hub established in the region of operation through which services and inputs are deployed to subregions.

Extension and advisory delivery and financing

The extension services are delivered by a team of advisors, each serving about 150 farmers and are expected to visit each farm twice a month. The advisors (six at the time of the study, of whom two were women) are mainly young and hold diplomas and degrees in agricultural fields. The current monthly fee per client is KES 150, which is a discounted entry rate for the MS pilot stage and development of the value proposition. This is expected to increase to KES 300/month once the clients see value. According to the MS director, this is the full cost of service delivery with about 10% as profit share for the enterprise. Additionally, MS has mobilised an ecosystem of agro-input and service firms, training institutions and research institutes to contribute to service delivery. Plans to provide marketing support exist, as an intermediary MS service.

Some reflections on performance of the model

The model is still at the early stages of implementation. It started in 2017 with a pilot at the Embu hub; by the end of 2018, 731 farmer clients had been recruited (37% females) of the target of 600. Of these, 82% were accessing extension services. Discussions with the MS team revealed several challenges: extension user fees had not been paid by most

clients; sales of complementary inputs and services (e.g. soil testing) were lower than projected; and the advisor:farmer ratio and frequency of farm visits were over-ambitious, which risked overshooting costs of delivery on the one hand and compromising quality of advice owing to time pressure on the other.

The survey (n=34) of the clients shows that farmers relied mainly on MS as an information source, but also used other sources, including farmer cooperatives, input suppliers, peers, produce buyers and, to a limited extent, public extension. While the implementation of extension by MS was still in the early stages, the study found changes in terms of farmer appreciation of the services and regarding outcomes at farm level. All the clients surveyed rated their implementation of advice as high. It involved mainly application of external inputs to improve crop nutrition and control pests and diseases. Limited access to financing during the growing season and effects of erratic weather were the most cited constraints to implementation of advice. For coffee, the key crop enterprise among the farmer clients, respondents reported an average yield of 3.6 kg/tree in the 2018 season, which fell short of the target of 10 kg/tree. These results were associated with a severe outbreak of coffee berry disease and the short period of implementing improved practices. Nonetheless, yields reported were higher than national averages, estimated at 2 kg/tree. But more comprehensive data is needed for a robust analysis.

Conclusion

The value proposition of the MS business model is well articulated and resonates with targeted clients. The RASTA methodology is useful in guiding the design and operationalisation of the model but has not been fully realised. We further note the following areas for attention: i) review key delivery and financing (fees) parameters – advisor:farmer ratio, frequency of contacts and delivery methods; ii) explore a more effective fee payment mechanism; iii) find ways to better target the clients who can appreciate and pay for services; iv) rethink advisor profiles, given that they need to take on more entrepreneurial roles besides their technical functions. Overall, we conclude that the financial sustainability of the model depends highly on attracting a critical mass of paying clients, reviewing the cost structure of the model, economic viability of other complementary services (soil testing, inputs store and produce aggregation) and better client targeting.

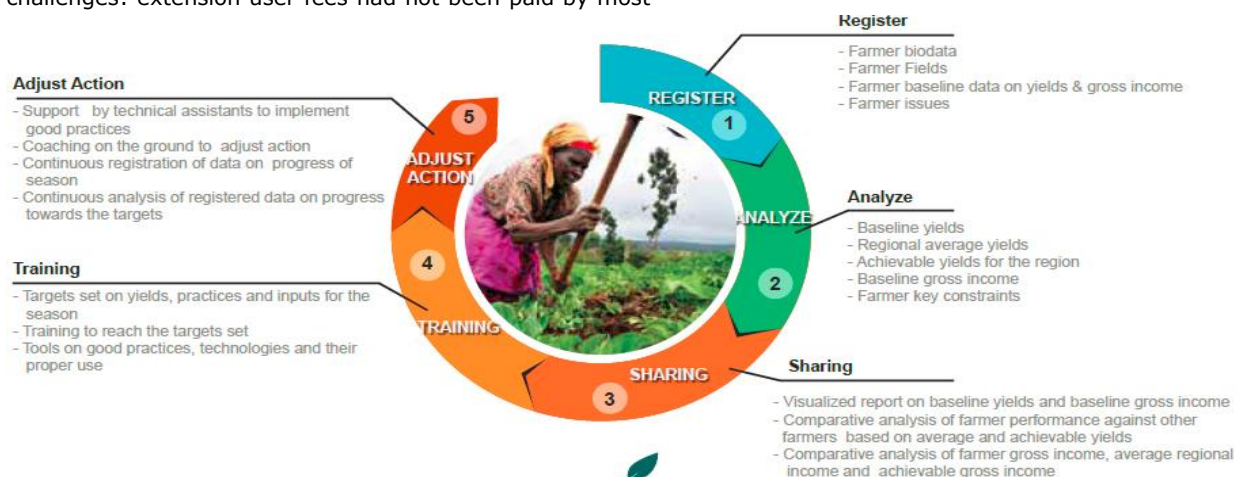


Figure 1: A description of the RASTA methodology. Source: Mazao Safi (2019)

Instaveg extension and advisory services model

The business model

InstaVeg Limited is a new entrant in the relatively successful Kenyan horticultural export industry (<http://InstaVeg.co.ke/about/about>). The firm was established in 2013 to export fresh vegetables to European markets. Instaveg uses an outgrower or contract farming business model in which extension and other services are embedded. The firm is a medium-scale enterprise that sources multiple fresh vegetables for export – French beans, baby corn, green soya, green peas, and courgette – from an estimated 300 small- and medium-scale outgrowers from Kirinyaga and Nyeri counties. More recently, the business has started supplying the domestic horticultural market.

Extension and advisory delivery and financing

The production department is the focus for extension and advisory services. The extension service is delivered through co-management, where the production team advisors' role is to recruit growers and support them with knowledge on good agricultural practices (GAPs) to meet stringent standards for the export market, and coordinate production to match demand in targeted markets. The advisory services are provided through group training and farm visits. Instaveg has a team of three advisors (all male) who hold either certificates or diplomas in agronomy, and each looks after 35 contracted entities (individuals or groups). The advisor is expected to visit three contracted entities daily.

The costs of delivering these AEAS are internalised into the firm's operations. As such, the costs are not explicitly factored into the pricing of the produce. Through a credit arrangement, Instaveg provides the outgrowers with inputs such as seeds and pest control products and facilitates links to other service providers, such as chemical sprayers. Instaveg also develops the extension content and tools collaboratively with other actors, including agrochemical companies, agrifood certification associations, NGOs and public agencies.

Some reflections on performance of the model

For Instaveg, the two key proxy indicators for measuring performance of their AEAS relate with the key roles of the production team. Firstly, they need to match production with end-market demand. The business set 720 tons of produce as the annual break-even capacity, but it struggles to meet this target.

Secondly, they need to ensure compliance with GAPs. This is an ongoing concern, as incidents occur of produce being intercepted that exceeds minimum residue limits. The survey found that 17% of growers surveyed had been sanctioned for non-compliance at one point.

From the demand side, the client survey (n=47 of which 38% were women and 15% youth) results show that growers appreciate the extension services but cite linkage to the market as the leading reason for the attractiveness of the model. The main services gaps identified relate to broadening the range of inputs that can be accessed on credit (e.g. fertiliser), facilitating advance payments and performing grading at the collection centre for enhanced transparency. Effects of erratic weather and incidents of

Instaveg being unable to absorb all the produce delivered were cited as demotivating the implementation of advice. Most growers (65%) reported some improvements in yield based on their own data for French beans and green soya in the previous three seasons. They also associate their participation with improvements in household wellbeing, such as ability to pay for school fees.



Conclusion

Instaveg has enabled an estimated 300 farmers to gain access to export markets, expanding more than just their market participation. This has been enabled by AEAS support that has transferred necessary knowledge and skills so they can produce for international markets with stringent quality and food safety requirements. However, the exact costs and benefits of extension services to Instaveg as a business and the effectiveness of the AEAS remain a blind spot. Improving analytics on the costs and benefits of investing in AEAS is considered a critical step to improving the design and performance of Instaveg's business model.

The sustainable financial performance of the firm, which is linked to tonnage of produce off-taken, is challenged as Instaveg has not been consistent in reaching its monthly targets. The causes of this challenge need to be clearly understood. This requires development and integration of a business performance management system that goes beyond a focus on the aggregation business. It should include farm-level indicators relating to extension services, which will be key in demonstrating the model's shared value.

3R Kenya Project

The 3R Kenya (Robust, Reliable, Resilient — From Aid to Trade) project is a learning initiative supported under the Agriculture and Food and Nutrition Security (FNS) programme of the Embassy of the Kingdom of the Netherlands. 3R Kenya seeks to generate evidence and lessons from FNS and other related programmes that support competitive, market-led models in spurring agricultural development. It focuses on the aquaculture, dairy and horticulture sectors. 3R Kenya is executed at a time when Dutch government's bilateral relations in Kenya are transitioning from a focus on Aid to Trade to enhance the development of agrifood sectors. Through evidence generation and stakeholder dialogue, 3R seeks to contribute to an understanding of effective conditions for sustainable inclusive trade for transforming robust, reliable and resilient agrifood sectors.

Perfometer extension and advisory services model

The business model

Perfometer Agribusiness Limited (PAL) is an independent dairy advisory and consultancy firm registered in 2013. The firm was set up to offer knowledge and advisory services to medium-scale dairy farms (MSFs) as a potential niche market for a private agricultural advisory business. Its business development was incubated by SNV's Kenya Market-led Dairy Programme (KMDP). KMDP was keen to stimulate the development and demand for quality, locally accessible private dairy advisory services. This was in recognition of the emerging dairy MSF investors that were seeking trusted knowledge and advisory support, which they were willing to pay for to establish profitable dairy farm enterprises. The value proposition of PAL is to "improve professionalism and profitability of dairy farms".

Extension and advisory delivery and financing

The model represents an independent dairy advisory services business model. PAL targets two types of clients: commercial clients, who are existing or aspiring dairy farm investors operating at a medium scale (average of at least 100 litres per day or 10 lactating cows), and projects or programmes, which contract PAL to offer services linked to dairy development initiatives. For the commercial services, PAL has, over time, developed a suite of distinct dairy advisory products, some that are one-off and others more extended services. Currently seven service products are on offer: Dairy Farm Benchmarking; Dairy Master Plan; Academy of Dairy Managers; Academy of Dairy Investors; Dairy World Magazine; Cow Barn Design & Construction Supervision; and On-Farm Coaching. Recently, PAL also developed an ICT tool (an app) for dairy herd management called CowPro that is to be deployed commercially.

PAL has a team of 12 advisors (58% female), mainly degree holders across a range of expertise: livestock/animal sciences, agronomy, economics, finance and accounting, ICT and architecture. There is no specific formula of advisor:farmer ratio that guides PAL's delivery approach, but the deployment of advisors depends on the products offered to a client, which typically requires more than one advisor to cover required expertise. Some products are delivered on-farm, while others are not. The model has relied heavily on international knowledge partners, particularly from the



Dutch dairy industry (who were instrumental in the start-up support through KMDP), local universities and NGOs to develop advisory products and build capacity of advisors. Overall, the products constitute a decision support approach, which has gradually evolved from a qualitative focus towards quantifiable and measurable performance indicators for a dairy farm. Each service product is costed separately, ranging from KES 30,000 (~USD 300) to KES 400,000 (~USD 4,000) with the overall objective of covering the total costs of services plus a 25–45% markup to cover administrative costs and surplus. At the time of the study, some of the products offered to commercial clients were subsidised through support from KMDP, as a way of stimulating market demand.

Some reflections on performance of the model

The review of PAL reports indicates that the business has grown a sizeable client base, reaching 205 MSFs at the time of the study. Additionally, it has continued to diversify its service advisory products, with a slow but steady uptake. The business has a diverse revenue from different user/client segments that has seen a gradual growth in turnover over the years. Annual revenue from commercial clients in 2018 was about 16% of the total, compared to 2% at start-up (2014). The client survey (n=17) showed that many have a positive attitude towards the services and see the potential to grow their dairy enterprises through such services. Although all surveyed farms were yet to realise own targets on milk yield improvement (an average of 25 litres/cow/day), data from 15 farmers reported yield average 18 litres/cow/day. This is at least double the national averages (estimated at 5–8 litres/cow/day). It is important to note that many farmers did not engage PAL's long-term support services.

Conclusion

PAL has identified a good niche market for its services. The model has been able to grow its client base (both commercial and project segments) and increase its revenue-generation streams and business turnover. However, to make a strong business case that will scale the model, PAL would need to integrate systems that have explicit and robust performance indicators in terms of service delivery and business growth. The model has proven its viability for scaling under certain conditions, such as ability to attract donor start-up support, establish linkages with advanced dairy knowledge systems, and advance competitive dairy industry growth through targeting the unexploited but high potential segment of MSFs. However, revenue from the MSFs segment has not been able to meet the full costs of service delivery.

NKCC extension and advisory services model

The business model

New Kenya Cooperative Creameries Limited (NKCC) is one of the leading dairy processors in Kenya. This state corporation sources raw milk from small-, medium- and large-scale dairy farms, which operate individually or in cooperatives and farmer producer organisations. In the recent past, NKCC has expanded its processing capacity from 850,000 to 1.5 million litres per day (NKCC, n.d.), but for the most part it still processes milk below capacity. This is linked to increased competition for raw milk from other players in the processing market. In response to increased competition, NKCC integrated delivery of dairy advisory

services to boost its raw milk procurement by increasing production of its supplier farmers and in return strengthening its business relationships. NKCC initiated a chain-embedded dairy advisory services business model, with the overall value proposition of the model to “improve and sustain quantity and quality of raw milk supplied” to NKCC’s 18 milk collection centres (MCCs). This case study was conducted in one of these, the Kapsabet MCC.

Extension and advisory delivery and financing

At each MCC, milk suppliers and other actors form an (Extension) Committee that liaises with the MCC manager and Extension Coordinator to develop an extension delivery plan. The committee then hires a team of private dairy farm assistants (DFAs), who typically have certificate or diploma qualifications in agriculture or livestock. The DFAs deliver extension through group-based training, exchange tours and individual farm visits working with about 50 farmers each. The DFAs are expected to facilitate farmer linkages to either in-house (cooperative) or external private input and service providers (e.g. AI technicians, agro-input dealers). The model enjoins local public livestock and veterinary officers in some service delivery.

As found in Kapsabet MCC, the model targets farmers of mixed scale who are considered long-term (at least one year) suppliers of NKCC and who can deliver at least 5 litres daily. The primary objective for advisory services was to increase milk productivity from an average of 4 litres/cow to at least 12 litres/cow. The model is primarily financed through a levy deducted from consenting long-term milk suppliers; this is currently KES 50 cents/litre. However, interviews with the NKCC team showed that the amount collected had declined and became insufficient to adequately remunerate the DFAs; sometimes it was used for other purposes. As the model evolves, it is expected that the cluster of 50 farmers will pay the DFA a performance-based remuneration, guided by set targets. This requires a decision support system based on continuous capture and analysis of farm-level data to inform the necessary adjustments to achieve the expected outcomes.

Some reflections on performance of the model

From the business side, introducing the DFA model in Kapsabet MCC resulted in increased milk volumes being supplied to the collection centre between 2014 and 2016. However, a dramatic decline started in 2017 in volumes of raw milk being supplied. Reduced milk prices being offered to suppliers was cited as a key factor in the decline in milk supplied. A decline in milk intake leads to a decline in levy funds for extension service and therefore leads to poor performance in delivery of advisory services. It also affects and undermines facilitation of linkages for complementary inputs, since the check-off system that enables access inputs on credit is linked to the volumes of milk the farmer supplies.

From the milk suppliers survey (n=46), many farmers reported to have implemented advice offered by DFAs. However, for 31 suppliers who provided milk yield data, the highest average daily yield for the best performing cow was 9 liters. While this was below recommended targets of 12 liters respectively, it was above the national average estimated at 5-8 liters per/cow/day. The study found that 26% of the supplies had met or surpassed the target yield.

Conclusion

The value proposition of NKCC’s DFA model was ambitious, but in line with the broadened functions of AEAS. Considerable efforts were put into rolling out the model and into modifications made along the way. We noted that key design and operational oversights seem to have undermined the effectiveness of the model. These included weaknesses in costing and financing analysis, opaqueness with how the collected levy is spent and departure from the clear performance-based advisory service delivery approach that was envisaged at conceptualisation. Additionally, the external forces and competition facing NKCC have made it difficult to show a strong value proposition, even to its long-term suppliers. In hindsight, a stepwise approach would have been better, where the model was rolled out and piloted in a few promising sites to learn and build capacity, confidence and buy-in with clients and within NKCC, to provide a proof-of-concept. More robust costing and financing options are imperative for sustainability and scalability. In practice, advisors are attracted to individuals supplying large volumes, while small producers have a better chance under a dairy group supply model. A further categorisation of long-term suppliers in terms of scale of operation and volume of milk supply might be useful in offering differentiated services and boosting inclusiveness.



Synthesis and Conclusion

The four case studies illustrate how the private sector is innovating AEAS delivery in Kenya’s transforming agrifood sector. The models show similarities and differences in design and performance parameters. Design aspects relate to the business model types (chain-embedded vs. independent), focus agrifood sectors, types of farmers targeted (small-scale and/or medium-scale entrepreneurial), and blend of financing revenue-generation models (including donor financing) and service delivery through partnerships.

The findings suggest mixed performance results. Clients had a high uptake of advice and some improvements in yields, but these are short of attaining set targets. There was limited integration of robust ICT systems for farm data capture, analysis and feedback to support progress towards set outcomes. Additionally, improving farming practices required increased external inputs and sometimes labour – additional investments that are too costly for some farmers. It was noted that support to close these yield gaps would also require linkage with stable and gainful output markets. This requires advisors to take on more entrepreneurial roles as service providers. Some of the models already link clients

to output markets, but with dynamics in markets such as seasonality and price fluctuations, AEAS need to support clients to be competitive in production.

From a business perspective, there is uptake of the services and a growing client base in some cases, but progress is slow. This limits business development and growth from a financial standpoint. Financing of AEAS through commercial fees or levies from clients is limited in all models, as willingness and/or ability to pay is a challenge. Additionally, we noted varied but limited analysis of full cost of service delivery and how this translates into appropriate and sustainable revenue-generation models. This is further weakened by a lack of monitoring and evaluation systems with key performance indicators for both the clients and businesses. Addressing this is imperative for such emerging business models that have ambitions to scale their operations.

Overall, we conclude that the models are relevant and offer unique value propositions for the transforming Kenyan agrifood system.

However, the models, some of which are in nascent stages, are yet to strike an optimal balance between value creation (service provision) and value capture (financing mechanisms) to demonstrate their business case and scaling potential.

Our specific recommendations for supporting private AEAS development are as follows:

- The businesses need to strengthen the financing and revenue-generation structure and link it to service delivery and accountability to clients. Financing can include both commercial revenue and alternative funding (public, donor).
- Digital technologies and systems that enhance robust data analytics need to be integrated to enable cost-effective, quality and decision support driven AEAS.
- Private AEAS need to develop capacity of advisors to be entrepreneurial service providers, and they need to invest in strong and mutually beneficial business ecosystems with other service delivery actors.
- Including support for output market linkages for producers may boost and sustain the relevance of AEAS. But maximising the effects of AEAS will relate mainly to supporting producers' competitiveness.
- The public sector needs to play its roles in supporting private AEAS delivery by addressing challenges related to regulation, human resource development and co-funding.
- Development of public-private partnerships will remain relevant in supporting emerging service agribusinesses include support for inclusive models.

References

- Babu, S. C. & Zhou, Y. (2015). Private Sector Extension—Synthesis of the Case Studies. In Knowledge Driven Development, 253-267 (Eds Y. Zhou and S. C. Babu). San Diego: Academic Press.
- Kabasa, J. D., Kirsten, J. & Minde, I. (2015). Implications of changing agri-food system structure for agricultural education and training in Sub-Saharan Africa. *Journal of Agribusiness in Developing and Emerging Economies* 5(2): 190-199.
- Kilelu, C. W., Klerkx, L., Leeuwis, C. & Hall, A. (2011). Beyond knowledge brokering: an exploratory study on innovation intermediaries in an evolving smallholder agricultural system in Kenya. *Knowledge Management for Development Journal* 7(1): 84-108.
- GoK (2012). The National Agricultural Sector Extension Policy (NASEP). Government of Kenya.
- Mazao Safi. (2019). Mazao Safi Company Profile. Nairobi: TradeCare.
- Muyanga, Milu and T. S. Jayne 2008. Private Agricultural Extension System in Kenya: Practice and Policy Lessons. *The Journal of Agricultural Education and Extension* 14: 111 - 124.
- NKCC--New Kenya Cooperative Creameries. (n.d.). NKCC Milk procurement infrastructure, extension services, linkages to financial institutions and dairy service provision. Nairobi: NKCC. PowerPoint Presentation.

Acknowledgements

This research brief was developed under the 3R Kenya project. The 3R project is funded by the Embassy of the Kingdom of the Netherlands in Nairobi, Kenya, within the framework of the Agriculture and Food & Nutrition Security programme.

Please cite as: Kilelu, C.W, Kathooya, G.M and van der Lee, J (2020). Emerging private extension and advisory service models in Kenya's transforming agri-food sector. 3R Kenya Project Practice Brief 017. Wageningen Livestock Research, Wageningen University & Research, Wageningen.

The brief is a summary of a more comprehensive research report available at <http://www.3r-kenya.org/>.

Contacts

Catherine W. Kilelu
3R Kenya Project Coordinator
E: C.Kilelu@acts-net.org
W: <https://www.3r-kenya.org/>

Jan van der Lee
Wageningen University & Research
E: jan.vanderlee@wur.nl
W: <https://www.wur.nl/en.htm>