Farmfit Intelligence

SERVICE PROVISION AS A VIABLE BUSINESS

Lessons from analyzing 50+ smallholder business models that create value for smallholders and companies alike

February 2020

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FOREWORD

The world faces an urgent problem: smallholders supply up to 80% of Africa's food, commonly through supply chains that are less organized, less transparent, less market oriented, and less funded than export supply chains. In sub-Saharan Africa, smallholder agriculture also contributes up to 40% of GDP and provides livelihoods for over 70% of the population. However, local food production is lagging population growth, leading to increased import volumes and financial burdens to many Sub-Saharan countries.

At IDH, we have a vision of highly productive and inclusive agricultural supply chains that empower African farmers and businesses to self-sufficiency, and our donors, the Bill & Melinda Gates Foundation and UK Aid, support IDH Farmfit to realize this vision. By improving the productivity and livelihoods of smallholder farmers we can achieve far-reaching impact, improving national and regional food security and trade in Sub-Saharan Africa.

Despite the enormous global dedication of resources to technical assistance, grant funding and blended finance for smallholder agriculture, the desired results have not always been produced. Underlying business models often turned out not to be viable without continued donor funding. We believe that IDH Farmfit has the potential to change this, because of its focus on data-driven decision making, business modelling and advice to partnering companies.

Using IDH's Service Delivery Model (SDM) methodology, we can analyze how companies are providing services to smallholder farmers and quantify the business case of these services – both from a farmer and company perspective. The data and insights are enabling companies (and their investors) to make smarter decisions in providing services, creating a commercial return and positively impact the lives of men and women in the farming community.

In this report we are proud to share a step in this direction. The potential of systematic collection and use of data is clear and will help us to better understand the key success factors and risks of inclusive smallholder business models. We hope that these lessons learned from analyzing 50 businesses will inspire you to design more effective and profitable services and invest in smallholder farmers.

Joost Oorthuizen

CEO
IDH, the sustainable trade initiative

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EXECUTIVE SUMMARY

The executive summary of this report is published online.

You can download the Insights Brief by clicking on the image below:

1.0

Unlocking business and investment in smallholder agriculture

1.1 IMPROVING FARMER LIVELIHOODS – WHAT HOLDS BACK SUSTAINABLE INVESTMENT?

Approximately one third of the world's 7.7 billion people partake in smallholder agriculture. Within this population, there are an estimated 500 million smallholder households in low-income countries relying on agriculture for their livelihoods[i]. Smallholder farming households comprise a significant portion of the world's population living in poverty, often making ends meet on less than USD 2 per day[ii].

Further, while 70% of Africans depend on agriculture for their food and livelihoods[iii], 20% of Africans are malnourished, the highest proportion of any region[iv]. At the same time, the continent has 60% of the world's uncultivated land yet imports USD 35 billion of food annually. Productivity of staple food and cash crops is less than 50% of the world's average and food spoilage and wastage is approximately 30% staple crops and up to 50% vegetables and fruits[v]. Low productivity drives poverty and food insecurity.

Additionally, opportunities are not shared equally. While in sub-Saharan Africa, women account for 40% of the agricultural labor force[vi], their productivity lags far behind men. For example, the World Bank estimates that in Niger, the gender productivity gap is as high as 66%.[vii] Climate change poses a serious risk everywhere, particularly for agricultural communities. The Intergovernmental Panel on Climate Change (IPCC) estimates a decrease in global agricultural production of about 10-25% by 2029 as climate extremes affect crop yields[viii]. At the same time, agricultural activities that contribute to greenhouse gas emissions and cause land degradation compound the problem, ultimately leading to negative environmental changes at multiple levels.

Large-scale investment in smallholder agriculture is crucial and can have significant compounding positive impacts; it is estimated that growth in agriculture is two to four times more effective in reducing poverty than growth in any other sector[ix]. Further, investment in agriculture plays a key role in improving regional food security and nutrition, empowering women across countries and cultures and ensuring effective implementation of climate change mitigation and adaptation interventions.

At the same time, for both local and global agricultural businesses, smallholder farmers are vital to meeting a growing demand for quality raw materials, both in export and local or regional food supply chains. In addition, companies are realizing the "aspiring poor" are also a substantial market of potential clients for purchasing their goods and services. Looking ahead, this market is expected to grow and companies who offer quality services and products to smallholders now might reap the benefits of producer loyalty in the years to come.

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However, many smallholder farming households have limited access to the global market economy and the goods and services it offers, preventing them from investing in their farms and resulting in low farm productivity and low household incomes. Accounting for the changing dynamics in global issues like food security and climate change, there are long-term implications for agriculture-reliant families and the commodity markets if investments are not made to ensure improved farm productivity and profitability.

While opportunities exist, key barriers keep the private sector from investing in service provision to smallholder farmers. First, challenging economics result in smallholder farmers often being unable to pay for services, at least initially. Compounding this problem is the limited understanding of smallholder farmers' needs, due in large part to a lack of quality farm-level data; there are relatively few value-adding services farmers are willing to pay for in the marketplace, even if they could afford them. High (perceived) risks and relatively few proven business models prevent large-scale commercial investment into the sector. Further, communication and organizational culture differences between value chain players, public sector and investors slow the spread of best practices and joint learning.

Key challenges hindering the effective development of smallholder farming include:

- Smallholders lack access to quality services, choice and affordability.
- Challenging economics of smallholder farming; low farm productivity, small plots and quality increasingly impacted by climate change.
- Lack of economically sustainable models to serve these farmers.
- Lack of an enabling environment supporting service providers and farmers including infrastructure, political and trading environment.
- Lack of sustainable financing for smallholders and smallholder business models; lack of payments by farmers and high dependence on donor/ concessional capital to cover service costs.

__SDMs__ are supply chain structures which provide services, such as training, access to inputs and finance to farmers to improve their performance and ultimately their profitability and livelihoods. SDMs can be managed by different types of companies ranging from commodity traders and processors to technological and financial service providers, which we call __SDM operators__.

As a result, the sector remains greatly underinvested. In 2019, it is estimated that the total gap or unmet demand for smallholder finance is around USD 170 billion or 70%, spanning all farmer segments and categories of financing need[x]. In Africa, governments allocate a declining percentage of their national budgets to agriculture and the private sector – less than 2.5% on average in 2017[xi]. Even in a country such as Kenya, less than 4% of bank lending goes to agriculture and internationally in 2017, less than 6% of official development assistance (ODA) was allocated to agriculture[xii]. The Africa Development Bank estimates there is a USD 23-31 billion annual funding gap to achieve inclusive agricultural transformation[xiii].

Companies and banks will only invest in serving farmers if they can expect a return on their investment; however, with few proven success stories of financially sustainable and inclusive smallholder-engagement business models, most often the expected return is unknown. The agricultural sector therefore needs to better understand how to design, implement and scale business models simultaneously serving the needs of agricultural companies and the smallholder farmers with whom they work.

At IDH, we call the business models aimed at serving smallholder farmers Service Delivery Models (SDMs). Since 2015 we have been working to understand how SDMs can be made more effective, efficient, scalable, sustainable and investable. We believe carefully designed SDMs can generate long-term value for all parties involved while providing farmers with access, quality, affordability and choice of services, increasing their autonomy and improving their livelihoods (see Figure 1).

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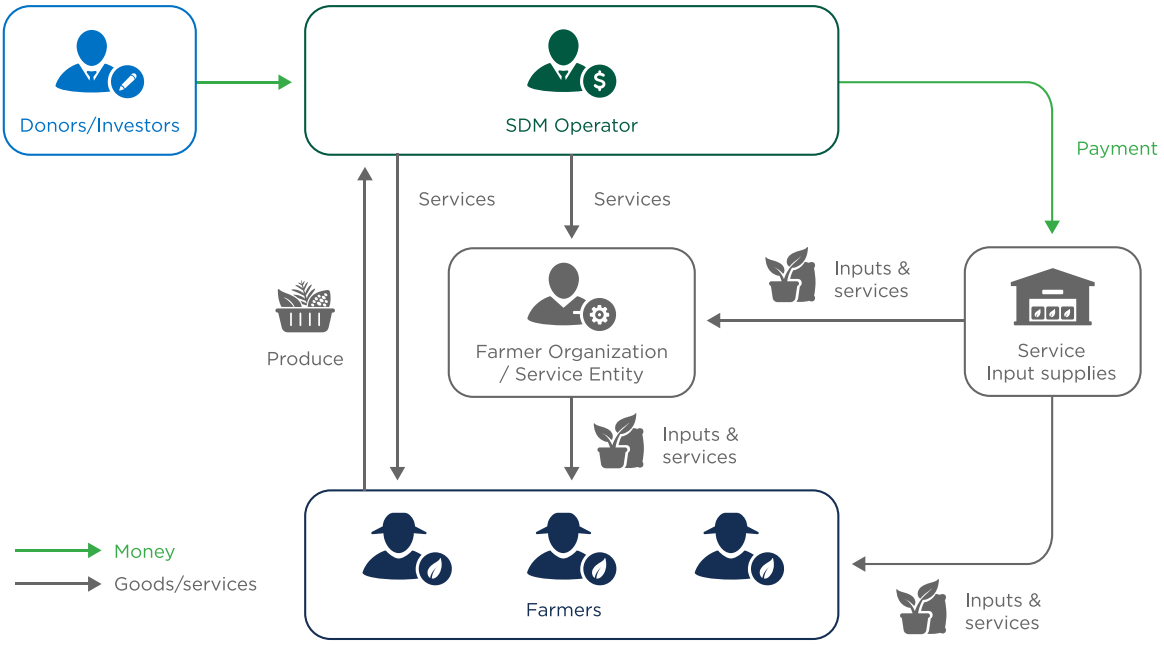
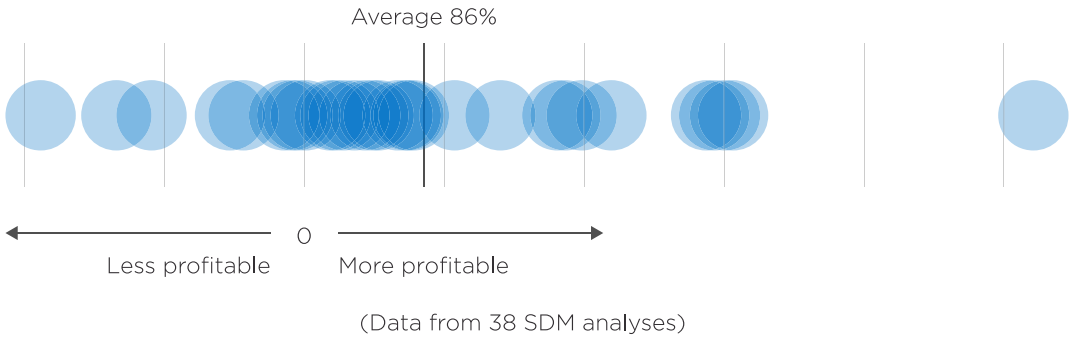
FIGURE 1: A BASIC SERVICE DELIVERY MODEL STRUCTURE



As Figure 2 shows, our analyses conducted across a diversity of companies, countries, commodities and contexts indicate these SDMs are generally able to create positive impact on farmer livelihoods, with an average of approximately 80-90% income increase[1] for farmers who receive services. However, it also shows significant differences in the relative impact created across SDMs, indicating a need to identify drivers of service effectiveness and share best practices.

Most SDMs improve smallholder productivity and profitability, *but there is substantial variation – indicating a significant opportunity to increase the impact of many SDMs.*

FIGURE 2: FARMER PROFITABILITY DISTRIBUTION ACROSS ALL CASES



1. These figures are based on farmer data provided by SDM operators. The varying quality and availability of this data means these figures have to be interpreted with caution. Please refer to "DATA AND FARMFIT" at the end of chapter 1 for more information regarding our data collection and verification processes.

SDM ANALYSES: BENEFITS AND APPROACH

Our SDM analyses help agri-businesses and services providers to improve their farmer engagement and sourcing models by:

- Analyzing a business model's scale, impact, efficiency and sustainability
- Profiling farmers (i.e., suppliers/ clients) operating within a business model and quantifying their business case for participation
- Testing a model's performance under various future scenarios and against external shocks (e.g. price or volume volatility)
- Providing strategic advice on service design, delivery, profitability and the ability to invest
- Identifying opportunities for technical assistance, strategic partnerships and/or investment

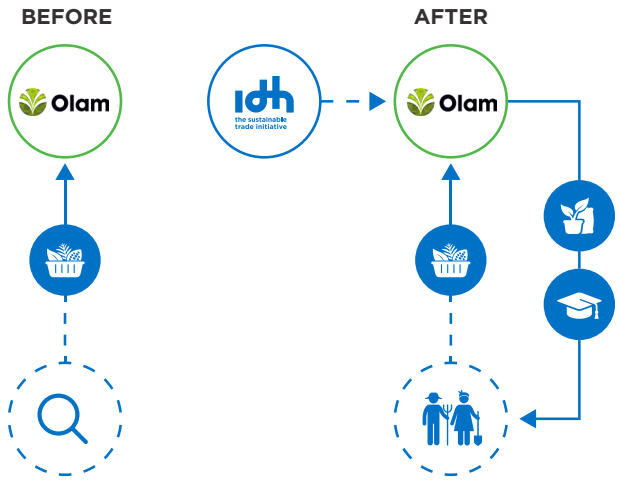
Over a 6- to 16-week period, a team of IDH consultants conducts a strategic assessment of the SDM, including one week at the clients' office. Data is collected from literature, internal company documentation, employee and partner interviews, farmer surveys and financial accounts. The results are captured in a business model tool and SDM case report.

These results can be used as a basis for:

- Internal alignment on strategy and implementation
- Strengthening the business model with strategic partners like Farmfit
- External communication regarding vision, innovations and impact
- Outreach to donors and commercial financiers with proposals for investment

SUCCESS STORY

Olam Cashew, Ivory Coast: reaching 30,000 smallholders and reducing sourcing costs by 25%



Olam was sourcing in bulk, with little visibility of where the cashews were grown and how to improve productivity and quality.

IDH supported Olam in establishing direct relationships with smallholder farmers and training them to produce the quantity and quality Olam requires

RESULTS

2x Farmer Productivity

5x Revenue Increase

25% Decreased Costs per mt

To further increase efficiency and impact, Olam and IDH implemented a graduation model for farmer groups to take over service delivery and become viable, independent businesses.

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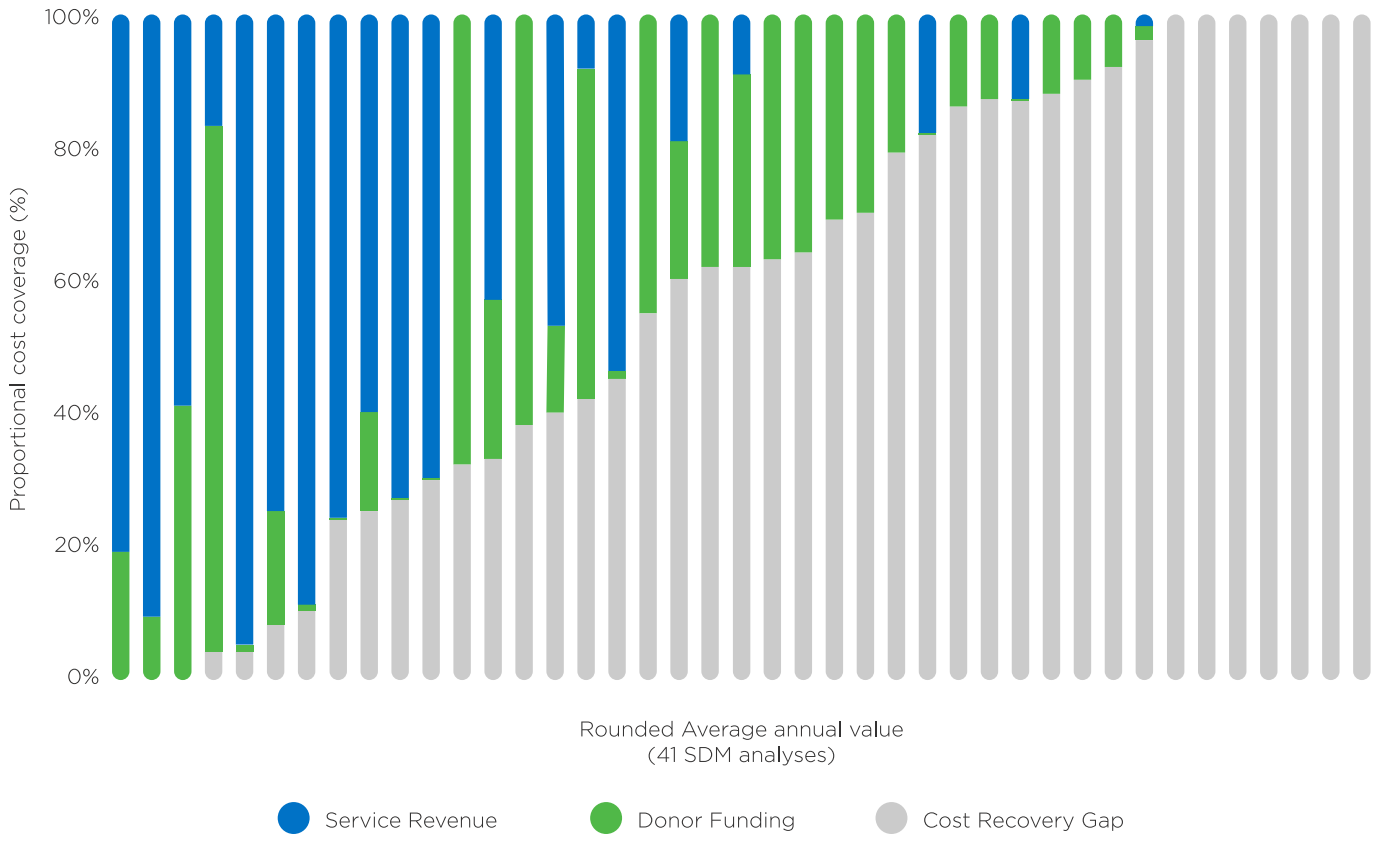
From a company perspective, the financial sustainability of these SDMs is considerably less clear. The vast majority of SDMs are receiving significant amounts of donor funding yet are unprofitable. On average, only 25% of the total costs are recovered through farmer payments for the services provided. Even with the support of donor funding covering an average of 18% of the costs of service provision, the average SDM directly recovers less than half of the costs invested in farmers (and only 25% from service payments – in a sustainable way).

Zooming in on individual SDMs in Figure 3, evidently most SDMs are unable to cover their costs through farmer service payments and/or donor funding. This clearly indicates the need and urgency to improve, test and scale economically viable service provision to smallholder farmers.

While some SDMs break even, the financial sustainability of most business models is unclear.

FIGURE 3: SHARE OF SERVICE COSTS COVERED BY SERVICE REVENUES AND DONOR FUNDING, PER CASE



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In fact, many SDM operators, such as processors or traders who also buy the farmers' produce, might be able to cover (part of) the cost of service provision by making higher commercial margins through increased security and quality of supply as well as lower sourcing costs. Our data thus far suggests some SDMs do indeed create enough value on the sourcing side to cover their service costs.

Most of these agri-businesses, however, do not systematically quantify the benefits of service delivery, leaving it unclear whether a business model is sustainable. The reliance on such (frequently) unspecified, unquantified and uncertain benefits to the sourcing business impedes the ability to attract external capital for service provision to smallholders. In chapter 5 of this report, we provide further details on the importance of quantifying the benefits of service provision which accrue on the sourcing side of the business to evaluate and ultimately reach financial sustainability.

Previously mentioned challenges faced by companies aiming to establish commercially viable SDMs are compounded by a range of broader issues limiting companies' ability to provide affordable, quality services to smallholder farmers such as:

- The lack of a common language between value chain players, the public sector and investors; slowing the spread of best practices and joint learning and hindering the building of strategic partnerships needed to drive change.
- The lack of quality data on and limited understanding of smallholder farmers' needs, which prevents the provision of tailored, value-adding services for which farmers are willing to pay.
- The lack of commercial investment in the sector due to unclear financial sustainability of business models (discussed above) and (perceived) high risks such as farmer defaults, price volatility and climate impact.

1.2 HOW IDH FARMFIT BOOSTS IMPACT AND FINANCIAL VIABILITY OF SERVICE DELIVERY TO SMALLHOLDERS

1.2.1 THE IMPACT ON BUSINESSES

At IDH we believe that by systematically describing and assessing the viability of the business case of SDMs and de-risking investments in smallholder agriculture, we can help overcome these barriers and unlock the investment the sector needs for both businesses and farmers to thrive.

Since the beginning of our work in 2015, we have seen an exciting mindset change in the agri-commodities sector. Whereas in the past, service delivery was often driven by sustainability departments and guided by companies' corporate and social responsibility (CSR) ambitions, we now see companies exploring service delivery to smallholder farmers as a real business opportunity. This is exemplified by global traders, such as: 1) ECOM and Barry Callebaut initiating dedicated farm services business units, 2) finance and input providers such as Tulaa and Syngenta joining forces to make quality inputs affordable and 3) a growing number of innovative technology providers making a business out of collecting and analyzing data to improve decision-making.[2]

The innovation and example highlighted below indicate how ECOM's vision of service provision has evolved over time and how the IDH Coffee Program is using the SDM methodology in supporting companies to set up sustainable SDMs and improve their investment decisions, respectively.

2. Please read more about IDH's work on data and technology for smallholder decision making here: https://www.idhsustainabletrade.com/news/creating-a-viable-business-model-for-optimizing-farm-data-to-realize-sustainable-production/

INNOVATION

Service provision as an independant business unit

SDM OPERATOR:
ECOM SMS

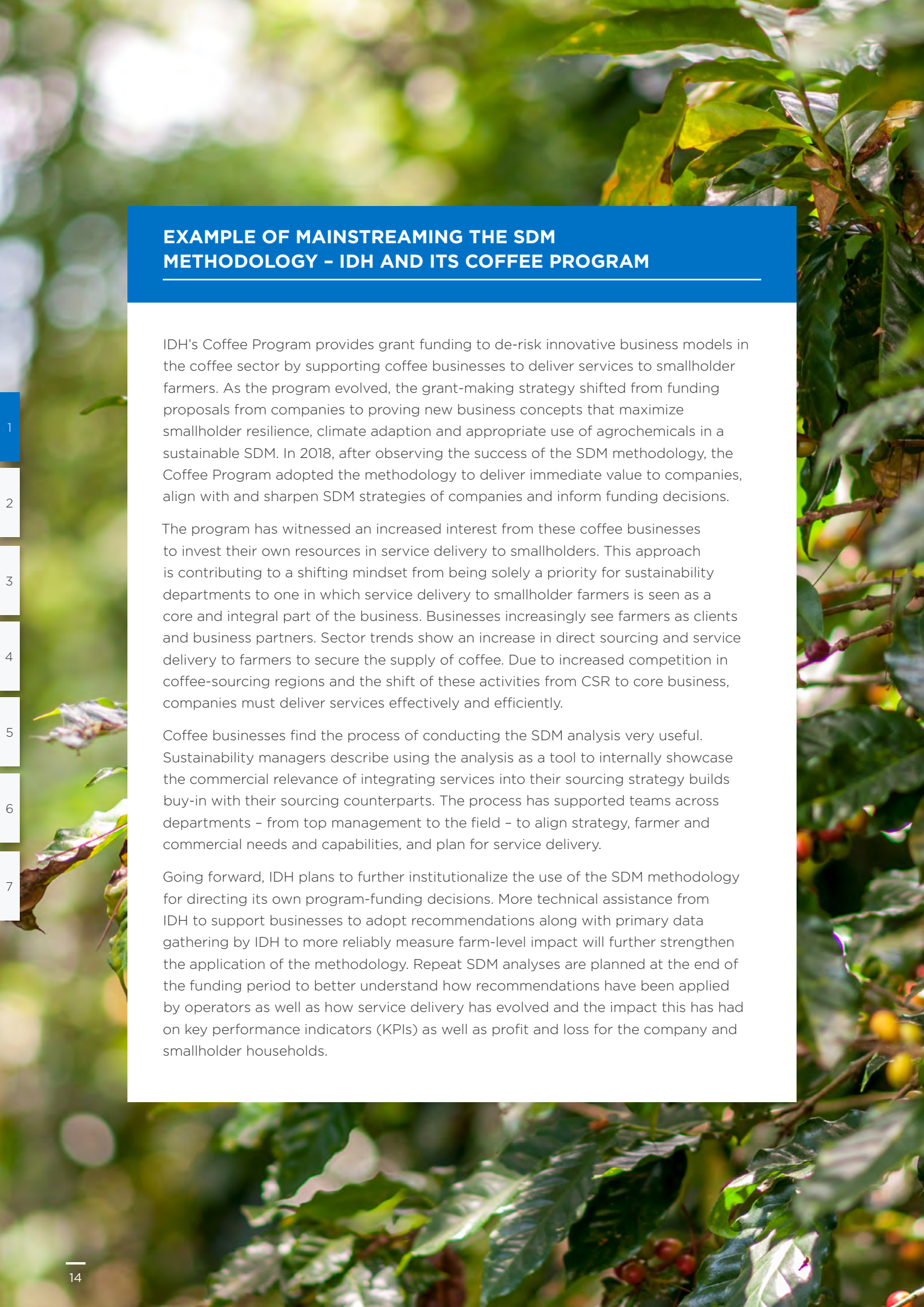
SDM TYPE:
Sourcing-Focused, Global Trader / Exporter

COUNTRY:
Various

COMMODITY:
Coffee

ECOM, a global commodity trader, set up its Sustainable Management Services (SMS) business unit 14 years ago to manage the sustainability needs of its clients and increase the quality and quantity sourced from its global smallholder network. Since then, SMS has evolved into a dedicated service provider to smallholder farmers aiming to break-even independently of ECOM's commercial returns from trading or processing additional volumes sourced from the farmers served by SMS. SMS is increasingly charging smallholders for the services provided, making it possible for SMS to serve farmers that are not even part of ECOM's supply chain. Charging smallholder farmers for services has the added benefit of providing immediate feedback on the quality of services as farmers are unlikely to pay for these services if they see no real added value.

For SMS, making service delivery financially sustainable on its own, rather than seeing it as a cost center, serves as a protection against internal budget cuts. Moreover, it increases SMS's ability to attract donor funding and commercial finance for further expansion.



EXAMPLE OF MAINSTREAMING THE SDM METHODOLOGY – IDH AND ITS COFFEE PROGRAM

IDH's Coffee Program provides grant funding to de-risk innovative business models in the coffee sector by supporting coffee businesses to deliver services to smallholder farmers. As the program evolved, the grant-making strategy shifted from funding proposals from companies to proving new business concepts that maximize smallholder resilience, climate adaption and appropriate use of agrochemicals in a sustainable SDM. In 2018, after observing the success of the SDM methodology, the Coffee Program adopted the methodology to deliver immediate value to companies, align with and sharpen SDM strategies of companies and inform funding decisions.

The program has witnessed an increased interest from these coffee businesses to invest their own resources in service delivery to smallholders. This approach is contributing to a shifting mindset from being solely a priority for sustainability departments to one in which service delivery to smallholder farmers is seen as a core and integral part of the business. Businesses increasingly see farmers as clients and business partners. Sector trends show an increase in direct sourcing and service delivery to farmers to secure the supply of coffee. Due to increased competition in coffee-sourcing regions and the shift of these activities from CSR to core business, companies must deliver services effectively and efficiently.

Coffee businesses find the process of conducting the SDM analysis very useful. Sustainability managers describe using the analysis as a tool to internally showcase the commercial relevance of integrating services into their sourcing strategy builds buy-in with their sourcing counterparts. The process has supported teams across departments – from top management to the field – to align strategy, farmer and commercial needs and capabilities, and plan for service delivery.

Going forward, IDH plans to further institutionalize the use of the SDM methodology for directing its own program-funding decisions. More technical assistance from IDH to support businesses to adopt recommendations along with primary data gathering by IDH to more reliably measure farm-level impact will further strengthen the application of the methodology. Repeat SDM analyses are planned at the end of the funding period to better understand how recommendations have been applied by operators as well as how service delivery has evolved and the impact this has had on key performance indicators (KPIs) as well as profit and loss for the company and smallholder households.

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Farmfit

Accommodating this growing interest, Farmfit was created to support such companies in professionalizing and scaling their service delivery and to accelerate the development of and investment into the agri-commodity sector. As Figure 4 shows, Farmfit consists of three complementary business units, each contributing to improving the business case for SDMs and scaling up investment in the sector:

Farmfit Business Support

with the SDM methodology at its core, provides analyses of the viability and effectiveness of an SDM operator's engagement with smallholder farmers. It helps to identify areas of improvement and innovation, provides technical assistance to accelerate scaling and deepen impact and match-makes between SDM operators and suitable finance (institutions) to scale innovations.

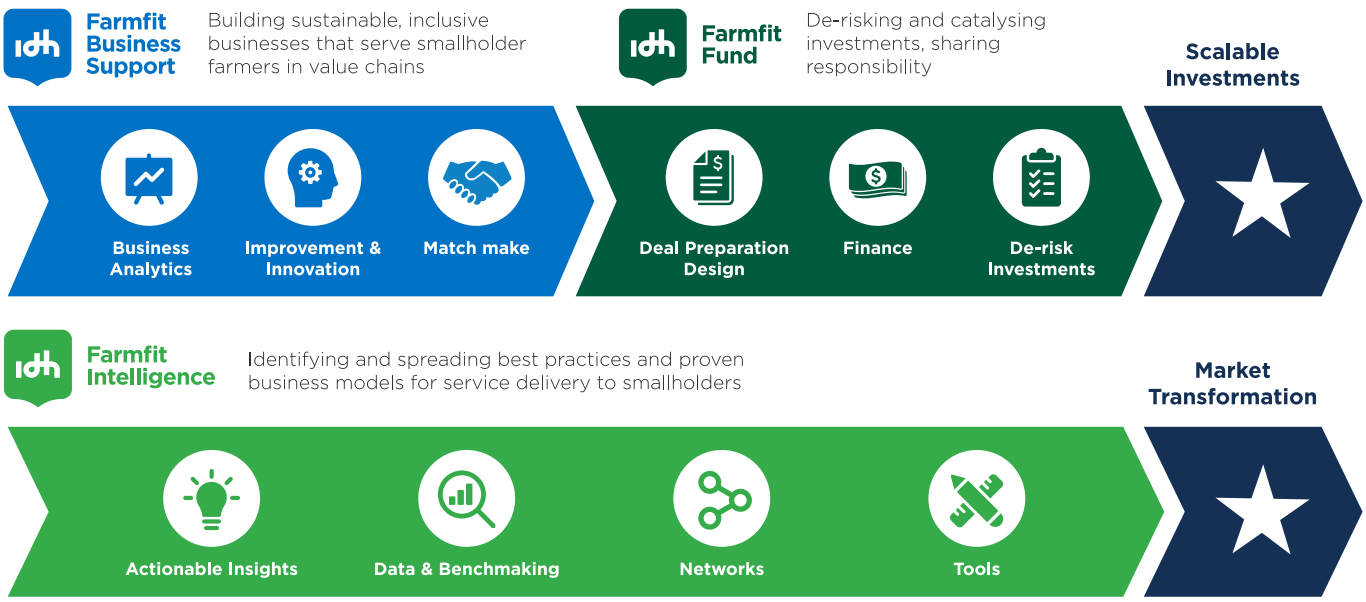
Farmfit Intelligence

shares key insights – gained from analyzing dozens of SDMs across different commodities and geographies – on how to make smallholder business models more efficient and effective and promote learning from innovations across the agri-commodity sector (included throughout this report).

Farmfit Fund

offers affordable and appropriate financial resources to start, sustain and grow businesses that sustainably engage smallholder farmers.

FIGURE 4: IDH FARMFIT STRUCTURE



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1.2.2 THE IMPACT ON SMALLHOLDER FARMERS

As highlighted in beginning of this report, the global population of 7.7 billion people who partake in smallholder agriculture depend, to varying degrees, on both informal and formal services for farm investments and improvements. Their dependency on agriculture for their incomes and food security has significant impact on their overall livelihoods and ability to lift themselves out of poverty.

While IDH works directly with the service providers who operate and contribute to service delivery models, the aim of our work is to have the greatest impact on the greatest number of smallholder farmers. We believe analytical insights, innovations and investments in SDMs have the potential to make the most significant impact on the lives and livelihoods of smallholder farmers by helping service providers reach farmers most efficiently and effectively.

Through the three interworking business units, Farmfit has ambitious goals to positively impact the productivity and profitability of smallholder farmers while simultaneously improving their climate resilience, promoting more equitable inclusion of marginalized groups and securing large-scale investments that promote agriculture growth and reduce poverty.

1.3 HOW THIS INSIGHTS REPORT CONTRIBUTES TO CHANNELING INVESTMENT TOWARDS THE SECTOR

IDH first detailed the SDM approach to assessing the viability of smallholder engagement models in the 2015 report "From Smallholder to Small Business". Following the development of the data-driven assessment methodology and the completion of the first 10 SDM analyses in 2015 and 2016, we published the inaugural iteration of our SDM aggregate insights report: "Service Delivery Models: Insights for continuous improvement and farm impact". This report highlighted the initial findings from analyses conducted in the coffee and cocoa value chains, including the need for long-term investments, the opportunity for value addition in service delivery and the important role of farmer profitability. The second publication reflecting our aggregate analyses and resulting insights – "Driving Innovations in Smallholder Engagement" – was published in 2017 and highlighted the first 30 SDM analyses along with our vision and plan to catalyze learnings through the establishment of a more robust center of knowledge and innovation (then referred to as the 'Smallholder Innovation Platform' or 'SIP'), which would subsequently become Farmfit in 2018.

This is the third SDM Insights Report highlighting our learning service delivery to smallholder farmers and the first since the inception of the Farmfit program. It serves as a continuation of the IDH objectives first started in 2015 to lower the barriers of investing in smallholder agriculture by strengthening and further spreading a common language about SDMs. It seeks to further improve our understanding of what constitutes an effective, efficient and scalable SDM, helping businesses and funders make better decisions when designing and investing in such supply chain structures. Simply put, this insights report aims to provide preliminary answers to the question "*how do we make service delivery commercially viable and impactful?*".

While we continue to learn and constantly refine our approach, we recognize we are still at the beginning of our Farmfit journey. The realization of the consistent lack of good quality farm-level data has led us to being collecting primary data ourselves to better inform the SDM analyses. Further, seeking to assess how SDMs can benefit farmer communities in terms of food security, gender equality and climate resilience, we have expanded the scope of our analyses to include those topics. Additionally, as understanding long-lasting sustainability is best achieved when multiple partners work together, we are expanding our efforts from working with predominantly individual sourcing companies towards facilitating impactful partnerships including major off-takers working with finance, technology and other service providers.

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Given the early stage of our journey, this report is intended to be descriptive, not prescriptive, and to present high-level trends and insights for sectoral reflection and "best-in-class" tangible examples that can be implemented.

We hope you will find the insights we have generated thus far an exciting indication of where we plan to take this work in the coming years and the significant possibilities these learnings can unlock for success in smallholder service delivery for a wide range of stakeholders. Centered around the question of how to make service delivery commercially viable and impactful, the report has key themes per chapter, structured as follows:

- Chapter 2 explores different types of SDMs and the conditions under which they generally occur and provides insights on how to take supply chain and business objectives into account for the optimal **design** of smallholder business models.
- In chapter 3 we share concrete insights on how companies can better serve their smallholder farmer clients to **increase the effectiveness** of their services and ultimately their impact on farmer livelihoods.
- Chapter 4 presents our insights on opportunities for substantial **efficiency** gains in delivering services to smallholders and explores strategies of how to best utilize these opportunities.
- In chapter 5 we discuss how SDMs can increase their **commercial viability** and attract the financing required to continue to scale.
- Finally, in chapter 6 we share our **visions for impact at scale**, investigate which models and partnerships have the potential to reach such scale and draft our next steps in accelerating progress towards that vision.

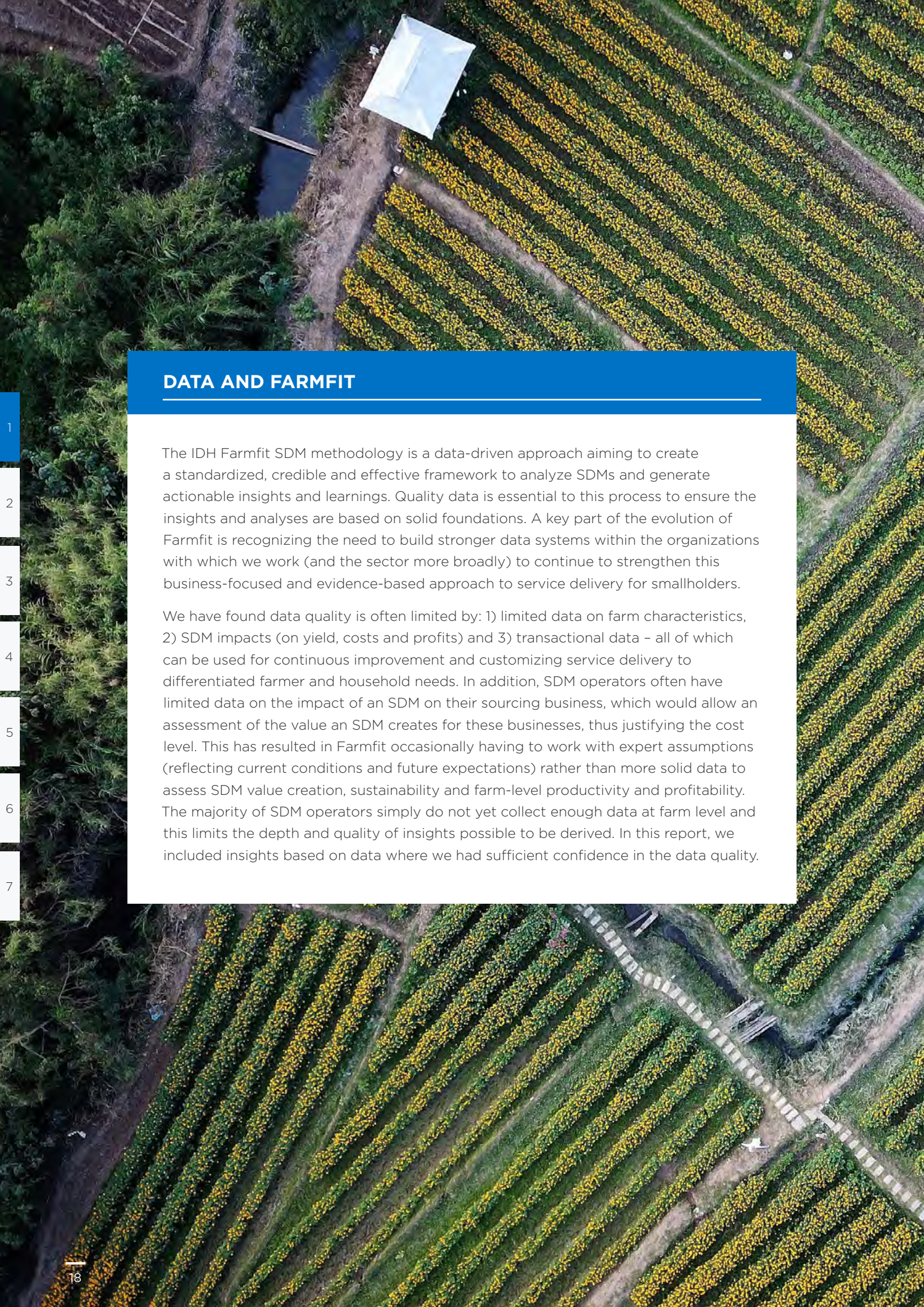
1.4 THE METHODOLOGY, DATA AND LIMITATIONS OF THIS REPORT

This report builds on the qualitative and quantitative insights gained from working with and analyzing more than 50 SDMs across a variety of countries and sectors.[3] As part of every individual SDM analysis, we quantify the business case for both companies and smallholder farmers. Building on more than 200 data points per case study captured in our SDM dataset, we gather evidence that strengthens our understanding of what determines the success of SDMs.

While the SDM methodology is highly standardized and our teams adhere to our quality standards, it is worth emphasizing there are limitations to this analysis. Most importantly, some SDM analyses are modelling future investments and innovations; these are based on forecasted figures which are yet to be proven. Similarly, especially regarding farm-level data, our SDM analyses are frequently conducted based on experts' best estimates rather than recorded data (see "Data and Farmfit" box). However, as previously indicated, IDH has recently started collecting farm-level primary data for all SDM analyses, improving the robustness of our data going forward. To test whether forecasted impact is realized in practice, Farmfit will conduct repeat analyses of all case studies going forward, building up a longer-term picture on the outcomes of different services and on how SDMs continue to evolve.

Finally, our sample of more than 50 analyses completed is clearly not statistically representative of the entire agri-commodity sector, especially when segmenting our database. Consequently, the preliminary insights in this report will require further testing as the database continues to grow.

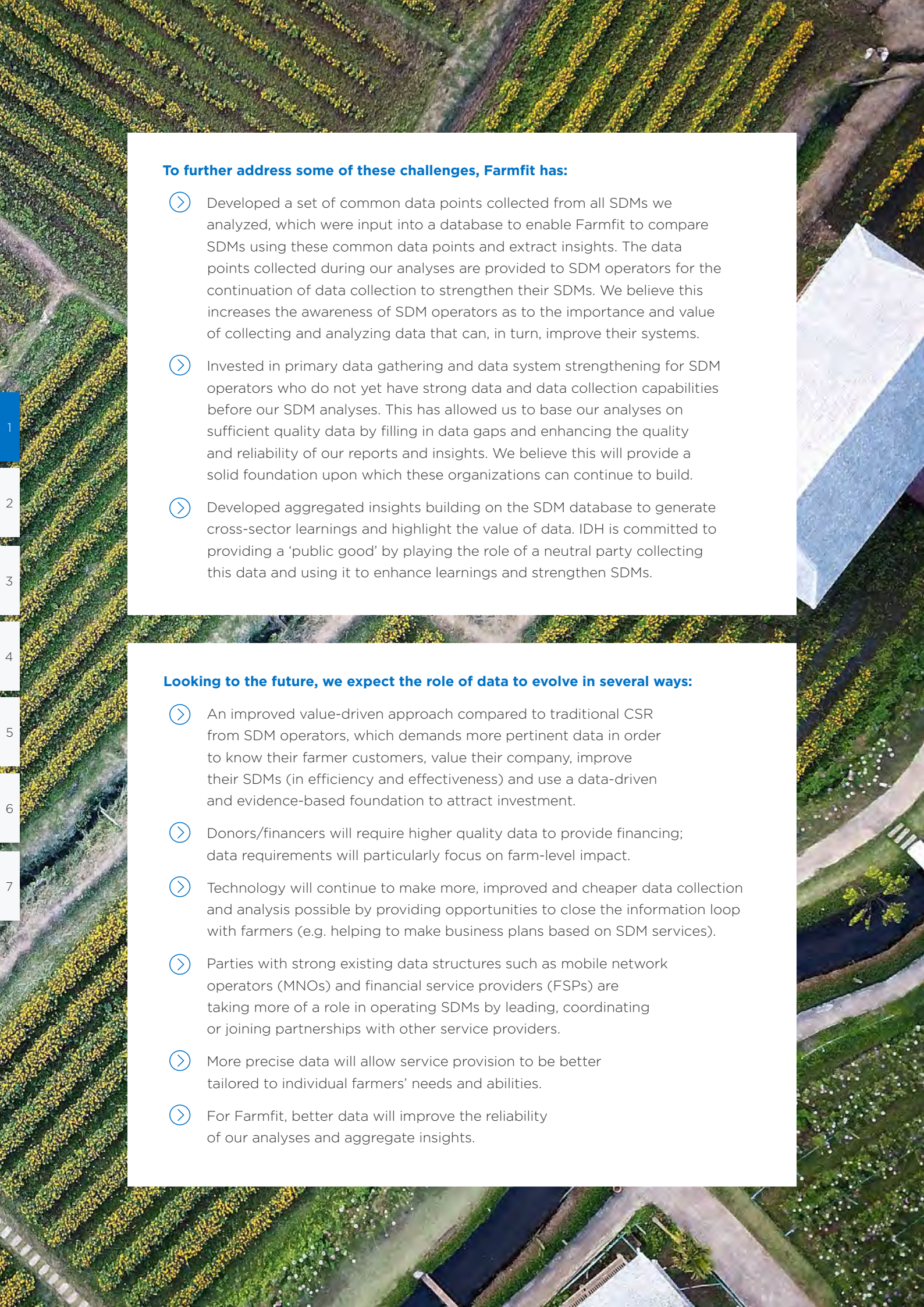
3. To date we have worked with 50+ companies, analyzing their SDMs. Qualitative insights come from our understanding of their strategies, innovations, value propositions and business models. Quantitative insights are derived from a dataset capturing performance data of a subset of these 50+ SDMs. After data cleaning and harmonization, 43 SDMs can be compared quantitatively.



DATA AND FARMFIT

The IDH Farmfit SDM methodology is a data-driven approach aiming to create a standardized, credible and effective framework to analyze SDMs and generate actionable insights and learnings. Quality data is essential to this process to ensure the insights and analyses are based on solid foundations. A key part of the evolution of Farmfit is recognizing the need to build stronger data systems within the organizations with which we work (and the sector more broadly) to continue to strengthen this business-focused and evidence-based approach to service delivery for smallholders.

We have found data quality is often limited by: 1) limited data on farm characteristics, 2) SDM impacts (on yield, costs and profits) and 3) transactional data – all of which can be used for continuous improvement and customizing service delivery to differentiated farmer and household needs. In addition, SDM operators often have limited data on the impact of an SDM on their sourcing business, which would allow an assessment of the value an SDM creates for these businesses, thus justifying the cost level. This has resulted in Farmfit occasionally having to work with expert assumptions (reflecting current conditions and future expectations) rather than more solid data to assess SDM value creation, sustainability and farm-level productivity and profitability. The majority of SDM operators simply do not yet collect enough data at farm level and this limits the depth and quality of insights possible to be derived. In this report, we included insights based on data where we had sufficient confidence in the data quality.



To further address some of these challenges, Farmfit has:

- Developed a set of common data points collected from all SDMs we analyzed, which were input into a database to enable Farmfit to compare SDMs using these common data points and extract insights. The data points collected during our analyses are provided to SDM operators for the continuation of data collection to strengthen their SDMs. We believe this increases the awareness of SDM operators as to the importance and value of collecting and analyzing data that can, in turn, improve their systems.
- Invested in primary data gathering and data system strengthening for SDM operators who do not yet have strong data and data collection capabilities before our SDM analyses. This has allowed us to base our analyses on sufficient quality data by filling in data gaps and enhancing the quality and reliability of our reports and insights. We believe this will provide a solid foundation upon which these organizations can continue to build.
- Developed aggregated insights building on the SDM database to generate cross-sector learnings and highlight the value of data. IDH is committed to providing a 'public good' by playing the role of a neutral party collecting this data and using it to enhance learnings and strengthen SDMs.

Looking to the future, we expect the role of data to evolve in several ways:

- An improved value-driven approach compared to traditional CSR from SDM operators, which demands more pertinent data in order to know their farmer customers, value their company, improve their SDMs (in efficiency and effectiveness) and use a data-driven and evidence-based foundation to attract investment.
- Donors/financers will require higher quality data to provide financing; data requirements will particularly focus on farm-level impact.
- Technology will continue to make more, improved and cheaper data collection and analysis possible by providing opportunities to close the information loop with farmers (e.g. helping to make business plans based on SDM services).
- Parties with strong existing data structures such as mobile network operators (MNOs) and financial service providers (FSPs) are taking more of a role in operating SDMs by leading, coordinating or joining partnerships with other service providers.
- More precise data will allow service provision to be better tailored to individual farmers' needs and abilities.
- For Farmfit, better data will improve the reliability of our analyses and aggregate insights.

2.0

Tailoring SDM design

INTRODUCTION

The market for serving smallholder farmers is extremely heterogeneous and there is no "one-size-fits-all" solution. The farmer clients of SDMs (who play the dual role of services' consumer and goods' producer) range from subsistence to semi-commercial farmers and face different challenges and service needs, such as different growing cycles for different crops and varying input needs and (access to) markets. At the same time, businesses have different strengths and service offerings and operate in a wide variety of geo-political contexts. Based on our work with more than 50 companies serving (and often sourcing from) smallholder farmers, we have identified several strategic lenses that can be used to make sense of the widely diverse landscape of serving smallholders and to understand how key SDM design characteristics can influence the opportunities and risks faced by an SDM:

- ***Core business objective:*** the primary function the SDM serves its operator.
- ***Farming model:*** the ways in which farms are organized within the value chain and the SDM.
- ***Crop type:*** the distinct value-chain characteristics of crops grown by farmers within an SDM.
- ***Enabling environment:*** the range of factors that together create the context in which an SDM operates and which can facilitate or hinder sourcing and service provision within a value chain.

This chapter discusses the relevance and impact of each strategic lens above and derives the challenges, opportunities and their implications for the design, improvement and scaling-up of SDMs.

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2.1 SDM CORE BUSINESS OBJECTIVES

The business orientation and core business objectives of SDMs and their operators are important starting points to consider when designing or investing in an SDM as these influence pathways to measure the potential revenue models, business risks, impact targets and investment needs.

Broadly speaking, SDMs can be subdivided into sourcing- and service-focused SDMs. The objective of a sourcing-focused SDM is to secure quality supply of product, whereas providing services is the core business and primary revenue source of a service-focused SDM. Sourcing- and service-focused SDMs frequently have an impact objective as well (e.g. the impact they are trying to have on farmer livelihoods), which may or may not be more important than the core business objective. However, as is it inherently difficult to assess the relative importance of an SDM's impact objective, we have chosen to distinguish SDMs based on their business objective and primary revenue source, independent of the weight they give to impact considerations.

- **The primary objective of sourcing-focused SDMs is to enable secure, high-quality, predictable and efficient sourcing from smallholder farmers.** Typically, these SDMs are operated by traders and processors, sometimes in close cooperation with major buyers and brands. These models offer services to farmers to ensure their sourcing departments have access to the right quality, quantity and price of raw materials at the right time of year. The main revenue source for most of these models is additional revenues generated in their sourcing, trading and processing activities, driven by improved security, quality of supply and/or lower sourcing costs per ton. As services are typically not (fully) paid for, service provision on its own is most often loss-making in these models. For many sourcing-focused SDMs, realizing impact also provides additional, perhaps unquantified, value (e.g. helping them meet sustainability commitments).

- **The primary objective of service-focused SDMs is the provision and sale of services to smallholder farmers.** These SDMs typically rely on service payments for their revenues either directly from farmers or through associated organizations. Often service-focused SDM operators can provide their services on behalf of sourcing-focused organizations, as seen in Figure 5. In this context, some service-focused SDMs also source and aggregate produce for larger off-takers while their primary source of revenues continues to be service payments rather than the sale of produce.

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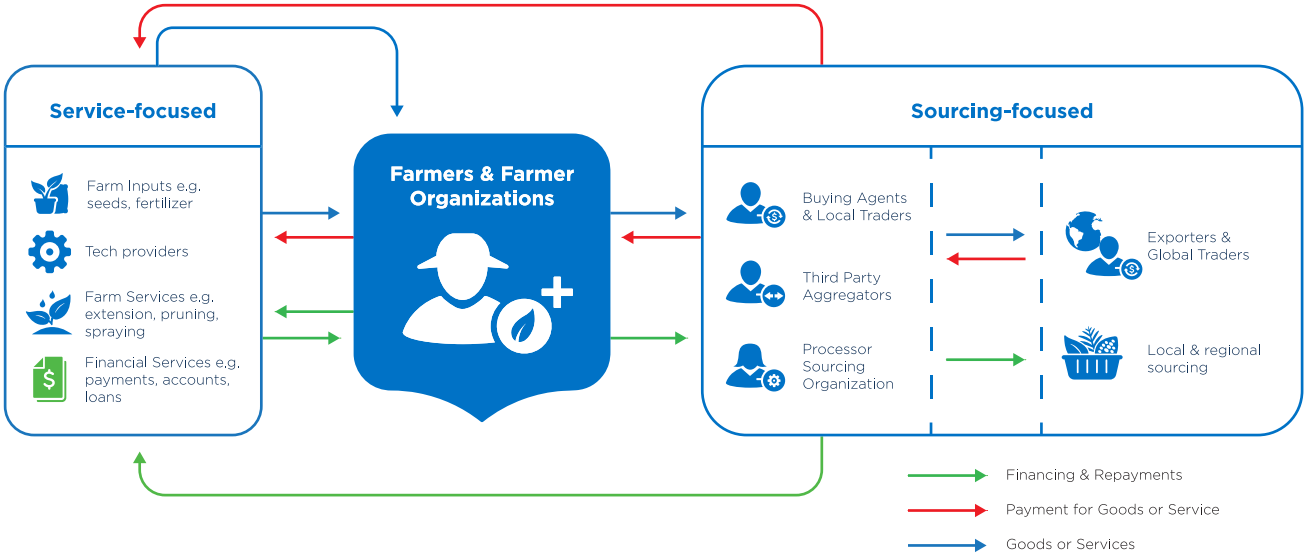
FIGURE 5: THE ECOSYSTEM OF EXCHANGE BETWEEN SDMS AND FARMERS AND FARMER ORGANIZATIONS



At a high level, our SDM analyses[4] indicate the following differences between sourcing- and service-focused SDMs, as shown in Table 1.

TABLE 1: CHARACTERISTICS OF SOURCING-FOCUSED VERSUS SERVICE-FOCUSED SDMS ANALYZED

Category	Sourcing-focused	Service-focused
Number of analyses	**37**	**4**
SCALE (# OF FARMERS)		
At time of analysis	**9,700**	**67,000**
Projected	**18,000**	**116,000**
Number of services provided to farmers (average)	**5**	**5**
COST		
Average SDM cost/farmer (USD)	**$280**	**$266**
FARM-LEVEL IMPACT OVER BASELINE FARMER		
Yield increase	**110%**	**20%**
Income increase	**113%**	**70%**
Ratio of Productivity: Profitability increase	**1:1**	**1:3**

4. To date we have analyzed the SDMs of more than 50 companies. Qualitative insights come from our understanding of their strategies, innovations, value propositions and business models. Quantitative insights are derived from a dataset that captures performance data of a subset of these 50+ SDMs. After data cleaning and harmonization, 43 SDMs can be compared quantitatively. Quantitative analyses throughout this report will represent this subset.

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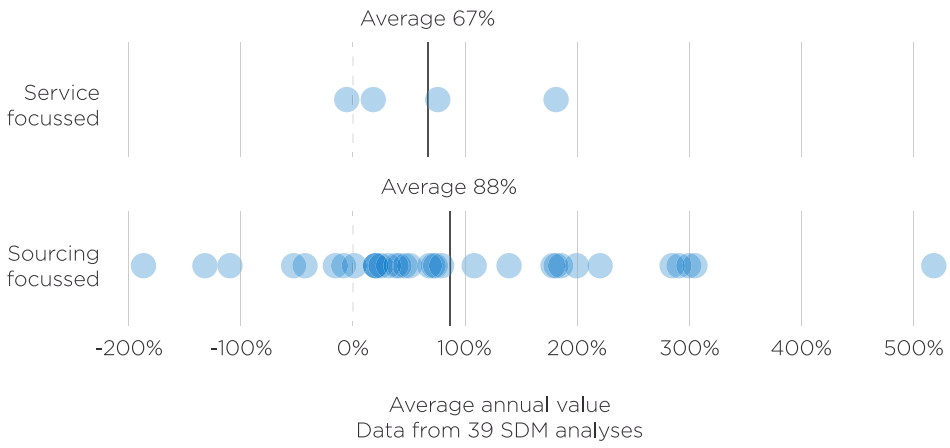
Although our sample size of SDM case studies is still limited (particularly for service-focused SDMs), we have identified preliminary observations when comparing service-focused and sourcing-focused SDMs.

Service-focused SDMs work with significantly larger farmer numbers. Sourcing-focused SDMs are limited by the number of farmers in their respective supply chains and often a consistent sub-segment within their value chain. On the contrary, service-focused SDMs do not face such a limit; their core objective is to generate service revenues and do not have the option to cover service costs with sourcing gains – they rely on rapid growth in farmer numbers to increase sales and benefit from economies of scale. These models aim to offset the smaller value generated by an individual transaction with larger volumes of overall transactions and through scale distribute fixed costs, such as overheads, over many more farmers.

On average, sourcing-focused SDMs appear to have a higher potential for increasing farmer profitability. This could potentially be explained by the market access available to farmers inherent to sourcing-focused SDMs. With the sale of produce being farmers' primary source of income, market access is a core determinant of their profitability. Almost all service-focused SDMs aim to facilitate this market access as well but are often unable to provide or even guarantee stable off-take, severely limiting the impact and financial sustainability of these models. While our (still limited) experience in working with service-focused SDMs seems to confirm this hypothesis from a qualitative perspective, we do not (yet) see this confirmed by our data. Going beyond the averages presented in Table 1 and looking at the distribution of individual cases as shown in Figure 6, we see no significant difference between sourcing- and service-focused SDMs in terms of impact on farmer profitability. As we analyze more SDMs in the foreseeable future, we will be able to further investigate this hypothesis.

A clear difference we see, however, is that **profitability increases appear more driven by productivity gains for sourcing-focused SDMs.** Profitability and productivity increases are approximately equal, on average, for sourcing-focused SDMs, whereas profitability increases are three times as high as productivity increases for service-focused SDMs. We believe this reflects to a large extent on the fact that sourcing-focused SDMs have an inherent interest in boosting volumes produced by farmers, as this

FIGURE 6: A COMPARISON OF IMPACT ON FARMER PROFITABILITY BETWEEN SOURCING- AND SERVICE-FOCUSED SDMS



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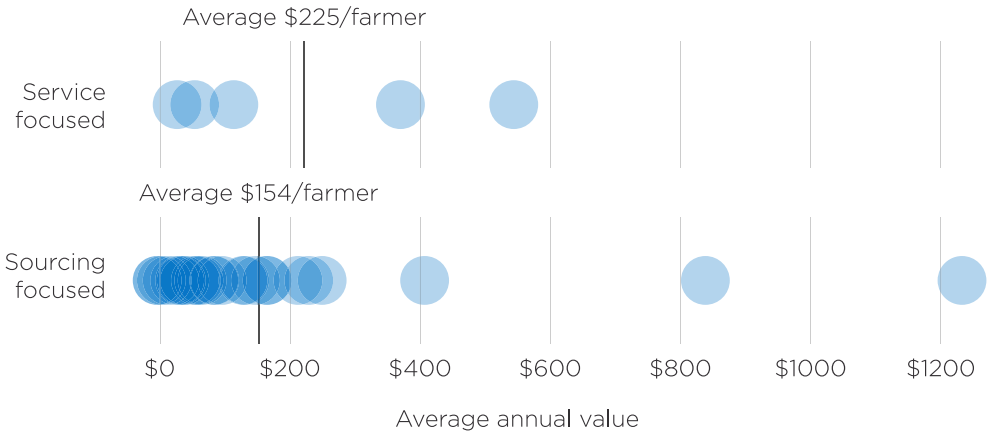
increases supply security, generally reduces sourcing and transaction costs (economies of scale) and allows the SDM operator to source larger volumes, decreasing the SDM costs when expressed on a per metric ton (MT) basis. Thus, on average for sourcing-focused SDMs, productivity increases play a significant role in achieving profitability impact. Service-focused SDMs have an interest in creating value for farmers as this increases farmers' ability to pay for services and improve the sustainability of the SDM. Impact can be achieved by more than productivity increases alone and these SDMs often offer a broader range of services benefitting farmers but do not necessarily have a direct impact on production volumes. For service-focused SDMs, creating impact at the farm level is the key driver of value since this increases the proportion of costs that can be recovered through services revenues.

While the cost averages in Table 1 differ slightly between sourcing- and service-focused SDMs, **SDM costs per farmer vary significantly within these types of SDMs** (see Figure 7). Combined with the small sample size of service-focused SDMs analyzed, we have not yet identified credible and discernible differences between sourcing- and service-focused SDMs on these metrics.

While SDMs will often differ in their characteristics from other SDMs operating with the same business objectives, we believe the insights derived from our analyses can provide a valuable starting point for helping individual companies, partnerships and investors with decision-making. Companies can begin to map their SDMs' strengths and weaknesses by using this framework, matchmaking can be facilitated, and partnerships can be designed based on complementary capabilities of the stakeholders involved while investors can be guided towards those SDMs best fitting their impact/risk profile.

Within the sourcing- and service-focused SDM categories we observed further differentiation between SDMs into distinguishable profiles we refer to as SDM 'typologies'; general descriptions and characteristics of these SDM typologies are detailed in Table 2. These general observations will not apply to all SDMs in a given category but can provide a useful starting point in understanding the context and impact of different SDMs. We provide only brief insights on service-focused SDMs as we have not yet conducted enough case studies to credibly identify relevant characteristics and trends.

FIGURE 7: ANNUAL SDM COST PER FARMER IN USD BY TYPE OF BUSINESS MODEL



This dataset excludes blockfarm models as their cost profile is much higher than typical of other models. Average annual value. Data from 37 SDM analyses

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Core objective	Business type	Primary purpose(s)	Scale	Benefits	Risks	Funding needs
Sourcing	Global trader / exporter	Impact objectives Secure, high-quality, efficient and predictable supply Develop farmers into business partners for the SDM operator	**Large (with intention to scale as fast as possible)**	Can leverage resources (human, capital, knowledge) and infrastructure of a large organization Strong, solid, credible business partner to investors and other partners Dedicated, knowledgeable and specialized sustainability teams Strong data systems Access to finance Access to sector knowledge Ability to offer a broad, often holistic set of integrated services to farmers Ability to capture value of productivity and quality increases	Value created by the SDM for sourcing activities is often unknown, partially due to the often-limited integration between SDMs (with potential emphasis on impact) Scale limited to the SDM operator's value chain (commodity sourced) Service delivery is not the SDM operator's core business	Long-term and innovative finance (e.g. funding of rejuvenation) Initial set-up costs
Sourcing	Local trader / processor	Delivering services closely related to intended sourcing outcomes: secure, high-quality, efficient and predictable supply	**Small to medium**	Highly business focused Relatively efficient service delivery (lower costs per farmer) High degree of financial viability Closely integrated commercial and service-focused staff (lean staffing for efficiency gains and allowing assessment and optimization of sourcing benefits for SDM operator) Ability to capture value of productivity and quality increases	Limited access to finance Limited data / technology infrastructure Frequently dependent on a small number of key people in management, often with no dedicated sustainability / SDM staff Often limited scale due to smaller supply chains Limited opportunities to learn from other SDMs from other geographies and value chains within the same commodity	Designing and piloting SDM Initial set-up costs Technical assistance (e.g. capacity-building of SDM staff) Building of data capabilities Scaling and replication into new regions

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Core objective	Business type	Primary purpose(s)	Scale	Benefits	Risks	Funding needs
Sourcing	Farmer-led	Improve the situation of members / farmers through business opportunities in services and market access for farmers	**Small**	Empowers farmers and/or their organizations High direct impact on farm profitability Low side-selling (thus larger funding recovery) as farmers own SDM Service provider and farmer interests are closely aligned	Often limited capabilities of farmer organization (many other SDMs include capacity-building for farmer organizations as a core component) Limited complexity of service provision models (most include basic services of training and inputs only) Reliance on partnerships for knowledge and capital Scale is limited by farmer organization membership, thus limited opportunities for scale efficiencies	Technical assistance (e.g. capacity-building of SDM staff) Funding for expansion of SDM services offered
Service	Farm services, inputs, financial services providers	Selling value-adding services to smallholders at a profit (achieving impact at farm level is an important precondition for this purpose)	**Small to very large**	Specialized (service provision is core business) Inherent objective to scale Inherent objective to maximize farm-level impact (as this increases ability to recover costs through service payments), including less focus on productivity-enhancing services alone Responsive to market demand Greater inclination for innovation than sourcing-focused SDM Can provide value for sourcing-focused SDMs	Relies on an ecosystem of complementary service providers (e.g. market access), allowing farmers to generate revenues and FSPs to help farmers finance the services Dependent on farmer ability to pay for services Cannot capture sourcing-related value deriving from the SDM In certain contexts, competition with subsidized services (from public, development or commercial actors)	Designing and piloting innovations Technical assistance (e.g. capacity-building of SDM staff) Long-term and innovative finance

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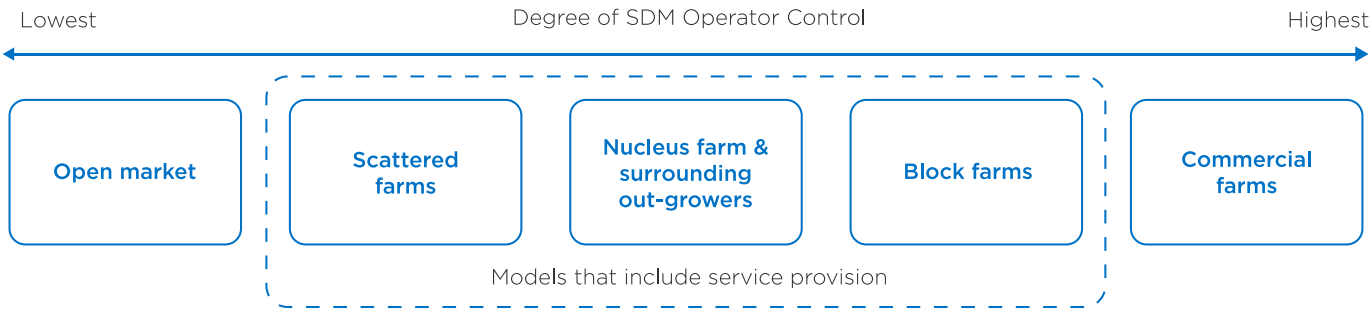
It is important to note the SDM operators described by the typologies do not work in isolation but are often working together in partnerships for the creation of an effective ecosystem for smallholder engagement. Providers have different strengths in service provision building on existing infrastructure and relationships with smallholders and differ in the benefits they derive from an effective SDM. We will further discuss partnerships in subsequent chapters of this report.

2.2 FARMING MODELS AND VALUE CHAIN ORGANIZATION

In addition to the core objective and business types operating an SDM, another key factor informing SDM design is the farming model or the way in which farms (and farmers) are organized and how sourcing is arranged within the SDM. Farming models have an impact on the kinds of services that can be and need to be provided, the degree of integration between service delivery and sourcing and the method(s) by which services can be delivered to farmers. In this section, we introduce a framework consisting of five farming models we have analyzed to date and zoom in specifically on block farms, a model deserving attention for its substantial differences from other farming models and its significant potential for creating sustained impact.

Of the five farming models, three lend themselves to the provision of services to smallholders and therefore form the core of our analyses: block farm (or in-growers), nucleus farm with surrounding out-growers and unorganized, scattered out-growers. As a reference, we include two farming models where no services are provided: large commercial farms (usually owned and operated by the SDM operator) and open markets (see Figure 8). Specifically, for sourcing-focused SDMs, assessing the value created for an SDM operator requires a comparison of different sourcing and/or farming models, most typically comparing a model that includes a service provider to one that does not (e.g. sourcing on the open market).

FIGURE 8: FARMING MODELS AND DEGREE OF SDM OPERATOR CONTROL



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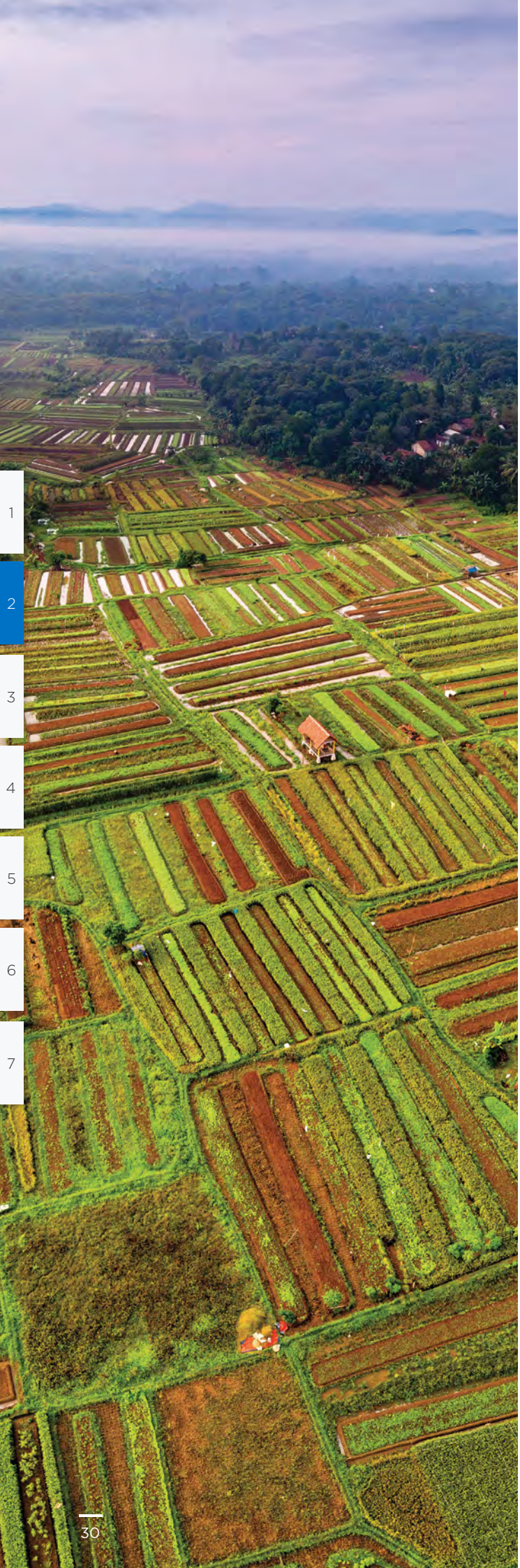
It should be noted that farming models are often not a deliberate design choice SDM operators make but rather a context-specific condition. While SDM operators can strategically choose the farming model to some degree, their broad freedom to choose is severely limited by the context of the country and value chain. For example, acquiring the land or capital to establish a commercial farm is often impossible and working with many scattered smallholders is the only option. Additionally, SDMs can contain more than one farming model; for instance, to ensure sufficient utilization of storage and processing capacity as well as reduce supply security risks, SDMs may combine sourcing from scattered smallholders with a company-owned farm and open-market sourcing. Nonetheless, we believe it is important for SDM operators and funders to be aware of the characteristics, opportunities and risks of different farming models.

Farming models provide different degrees of control for the SDM operator and different degrees of control over adoption rates and supply security. As represented in Figure 8, at opposite ends of the spectrum are a company-owned farm and open-market sourcing. A company-owned farm delivers the highest control over production volumes, varieties planted, and inputs and practices used; the result is high predictability of quality and supply. Open-market sourcing provides the least control; a business is fully dependent on the market when it comes to volumes, prices and quality. While SDM operators may also source from company-owned farms and the open market, in neither of these farming models are services provided to farmers. The SDMs we have analyzed provide a degree of control falling between the two examples just described as they are dependent on the productivity and "loyalty" of the smallholder farmer, through which both models aim to increase with their services. In addition, these models allow not merely a degree of control over sourcing but also allow an SDM operator to achieve impact at farm level.

The farming model of an SDM can have a significant influence on its sustainability. For sourcing-focused SDMs, the extent to which the model allows a company to source more securely and at higher quality from farmers within the SDM is highly influenced by the farming model. Similarly, how farmers are organized within the value chain and in the SDM specifically impacts the degree to which the SDM operator can generate sufficient touchpoints to drive high adoption rates of the practices taught and services provided, thus impacting farmer livelihoods. These two points are critical to consider for both SDM operators seeking to maximize the likelihood of reaching their objectives – whether sourcing-, sustainability-, or impact-related – as well as for SDM funders seeking to drive certain outcomes within the SDMs where they decide to make investments.

Overall, a key factor influencing the choice between farming models is the SDM operator's appetite for risk and long-term investment interests. Typically, models offering the highest degree of control with regards to service and sourcing also entail the highest need for organizational complexity, upfront investment and fixed costs, which are particularly reflected in head-count and results in overhead costs. These models carry high exposure to risks associated with bad harvests and low capture rate which can serve as a deterrent to companies wishing to focus on their core business of sourcing while minimizing fixed costs and risks.

As indicated, most of our analyses have been conducted on SDMs that can be classified as "nucleus and surrounding out-grower" or "scattered out-grower" models. However, for the purpose of highlighting innovations and insights we dive deeper into block farm models in the coming section.



2.2.1 BLOCK FARMS, A HYBRID MODEL BETWEEN SMALLHOLDER AND COMMERCIAL FARMING

Within certain value chains, block farms are emerging as an interesting way for sourcing-focused SDM operators to serve smallholders in a controlled environment and virtually eliminate side-selling. A block farm is a large and contiguous plot of land leased or owned by the SDM operator and is divided into smaller sub-plots of several hectares which are individually farmed by smallholder farmers.

*A **block farm** is a large and contiguous plot of land leased or owned by the SDM operator and is divided into smaller sub-plots of several hectares which are individually farmed by smallholder farmers.*

The SDM operator in this model can provide several key services at scale, such as training, inputs and mechanized planting and harvesting to ultimately approach the level of professionalism of a commercially-run farm. Oftentimes the SDM operator will run its own farm next to the block farm allowing efficiencies in procuring the same inputs and using some of the same equipment on both the SDM operator's farm and the block farm. As the plots are contiguous, the sizes, shapes and locations of the plots are designed in a way to make such services possible and economically viable. By controlling the harvesting, preferably through mechanization, the SDM operator can largely eliminate side-selling and ensure predictable timing of supplies; in turn, SDM operators in such models are able to provide more expensive and complete services.

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Block farms are very different in structure and performance compared to other farming models. In many (if not most) contexts, block farms are not a feasible option due to variables, such as land ownership, availability limitations as well as the economics of different crops (for which contiguous plots and mechanization options may not provide value). Block farms tend to have a smaller scale than other SDMs partly due to the limited availability of land and the high capital costs of acquiring and developing the land. Due to a higher degree of control over adoption and sourcing and the ability to use additional services due to the positioning, size and shape of plots (e.g. mechanization services), block farm models tend to be significantly more expensive per farmer. As a percentage of the value of what is being sourced from farmers, block farm SDMs are up to four times more expensive than other SDMs. We believe this is partially driven by the tendency to offer more expensive services but mainly due to the greater ability within block farm models to capture sourcing benefits. As they have a high degree of control over sourcing (e.g. centralized harvesting), block farm SDM operators can benefit from reduced side-selling, high predictability of supply, high degree of control over varieties planted and practices and inputs applied.

TABLE 3: CHARACTERISTICS OF A BLOCK FARM VERSUS OTHER LOCAL TRADER AND PROCESSOR SDMS ANALYZED

	Local off-takers	
	Block Farms	**Other local trader/ processor models**
Number of analyses	**5**	**7**
Projected number of farmers	**2,830**	**28,289**
Min. Cost per farmer	**$299**	**$5**
Farmer yield increase over baseline (annual average)	**90%**	**40%**
Farmer income increase over baseline (annual average)	**290%**	**60%**

Table 3 contrasts key metrics of block farms against other local trader or processor models. It is worth noting Table 3's metrics are based on a limited sample size; differences we see between block farms and other models might (partially) be caused by major differences in other characteristics of the model such as those between cash and staple crops. However, we have been able to distill several preliminary insights to be substantiated in the foreseeable future. In addition to the differences in costs and scale discussed previously, we see the impact on farm productivity and profitability is considerably higher in block farm models, which can be explained by the high degree of farmers' control and possibility to apply professional farming techniques including mechanization. Besides achieving a higher profitability increase for farmers, the income of block farmers is also likely to be more stable. With a high degree of company production and harvesting control, crop losses and resulting incomes losses are significantly less likely. Moreover, most block farms guarantee a minimum and maximum price for the produce up front (i.e., farmers are protected if market prices should fall below a certain minimum, yet they are unable to benefit from the upsides of steeply rising market prices). While such a pricing policy is not exclusive to block farms, it is in practice difficult to apply in other SDMs because farmers will generally not sell product to an SDM operator below market price (particularly if they have an option to sell to another buyer). While both the impact increase and stability of income are higher for block farmers, from a donor and investor perspective it is important to realize the overt value generated per dollar invested is considerably lower for block farms owing to their high capital and service delivery costs and relatively small scale.

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For both farmers and SDM operators there are benefits and drawbacks to block farms. Both can benefit from the structure and professionalism of the service delivery, the proximity of the farm plots, control of the land and how it is farmed. These characteristics allow SDM operators to provide services at scale to farmers that might otherwise be too difficult or risky (financially) to provide to scattered farms. A potential downside however, is the limited control of farmers over farming decisions (e.g. the commitment of commodity purchasing price maximum as mentioned previously). In some block farms, the farmers could almost be considered shareholders with their land farmed for them and a share of the resulting profit being paid out to them at the end of every season; this is not necessarily a problem since most block farmers have their own plots of land separated by the block farm. However, it is important for farmers to remain involved in the farming activities and connected to the SDM to ensure they take responsibility in maintaining and protecting the farm.

A clear benefit of block farming models for SDM operators is it can provide a license to operate. In many cases, an SDM operator would be unable to acquire or safely manage land for its own farm. Inviting the farmers in the community to farm the land under favorable conditions paves the way for good relationships with the community and often enables companies to acquire or lease land from the government. However, the model is not without risk, which include high set-up costs and, in some cases, a negative impact on soil degradation due to a focus on monoculture. The model also clearly relies on the availability of appropriate large areas of land but with drought-tolerant crops like cassava it may be an interesting model to explore in semi-arid locations with under-used or fallow land.

2.3 DIFFERENTIATING BETWEEN CASH- AND FOOD-CROP SDMS

2.3.1 CHARACTERISTICS AND CONSIDERATIONS

To date, IDH has predominantly analyzed export-focused cash-crop SDMs, while only 25% of our analyses have focused on food or staple crops. However, as Farmfit aims to make a larger impact with local SMEs, increase local production of underserved crops, promote better food security and nutrition as well as support intra-African trade, an increasing proportion of SDM analyses are being conducted on food crops. We have also encountered SDMs providing services for cash and food crops – these could be service-focused SDMs that are crop agnostic or global traders traditionally focusing on export crops diversifying into food crops. For the purpose of our analyses we always categorized SDMs based on the main crop sourced. In addition to the significant impact potential of efficient and effective food-crop SDMs, we believe there are overlapping best practices between food- and cash-crop supply chains for providing services to smallholder farmers in an SDM.

The objectives and funding possibilities of SDMs focused on food crops tend to differ from those of cash-crop SDMs. For instance, SDM operators dealing in exported cash crops can often receive a certain price premium for sustainable and traceable products; SDMs are often designed to meet sustainability requirements, allowing an SDM operator to have a sustainability budget to cover part of the SDM costs. This is often a key reason for the willingness and ability of SDM operators to finance (parts of) the SDM. In contrast, food-crop SDMs tend to be motivated primarily by the need to secure quality supply, often without having (ambitious) impact targets. Moreover, food crops are often sold to markets (and consumers) not placing the same premium on sustainability as is often present in cash-crop markets.

Most food crops are seasonal, reducing the time horizon for financing needed, making it faster to see and capture results and requiring a different set of services. Many cash-crop SDMs we have analyzed to date (e.g. coffee, cocoa, cashew) are perennial crops. Rejuvenating ageing farms – a key service to improve productivity and farmer income – is a long-term investment and is relatively complex to implement. Long-term financing is risky for farmers who enter into such a commitment and SDM operators who are exposed for a long period of time and must engage in (or facilitate) access to finance, which is typically far from their core business. As the expected impact in these cases will take longer to materialize, investors and SDM operators must be willing and able to accept a longer time horizon and time-related risks. Seasonal food crops tend to require primarily seasonal financing and the benefits of these investments are often realized by the end of the season.

Simply by the nature of the commodity, staple-crop SDMs have the potential for a more direct impact on food security but face unique challenges to making this impact. They tend to be in less organized supply chains and thus are less likely to have a strong anchor off-taker to act as service provider and/or provide an extensive existing infrastructure upon which to layer the SDM. Additionally, they face more challenging farm economics and often include more subsistence-level farmers who are more difficult and more expensive to serve.

Investors and SDM operators should be aware of these different characteristics, possibilities and risks of both food- and cash-crop SDMs. In the next section we discuss how these different characteristics of staple- / food-crop SDMs manifest themselves in the performance and impact of these models.

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2.3.2 PERFORMANCE AND IMPACT

While our sample size is limited, we observe, as reflected in Table 4, food-crop SDMs tend to be much larger in size than the average cash-crop model. This could be partially explained by the higher number of farmers active in food crops in Africa (all five food-crop analyses were performed on SDMs in African contexts). Another reason for this difference in size could be the fact that many cash-crop SDMs are only catering to a small share of the farmers from whom they (indirectly) source, as their motivation to serve smallholder farmers is often driven by niche market demand for sustainable produce. By contrast, for most food-crop SDMs we have analyzed, the motivation to source from smallholders is primarily an economic one (i.e., there is a direct benefit of scaling the SDM independent of market demands or premiums for sustainability).

Another preliminary insight from our analyses is SDMs in food crops (excluding block farms) tend to incur lower costs per farmer served. This could reflect the less costly, long-term service needs of seasonal crops but also the lower starting incomes of food-crop farmers. As margins tend to be smaller and farmers tend to be poorer in food-crop supply chains, the cost of services and especially input packages need to be kept at a minimum to remain affordable for smallholders. This is validated by looking at cost as a percentage of farmers' production, which is similar for both cash- and food-crop SDMs.

TABLE 4: CHARACTERISTICS OF CASH- VERSUS FOOD-CROP SDMS ANALYZED

	Cash crop	Food crop
Number of case analyses	**31**	**5***
Scale (# farmers) at the time of analysis	**11,141**	**53,740**
Average annual cost per farmer	**USD 170**	**USD 120**
Farm profitability increase	**60%**	**220%**

* *This dataset excludes blockfarm models as their cost profile is much higher than typical of other models.*

From an impact perspective, the most important insight of our preliminary analysis is SDMs focusing on food crops achieve considerably higher profitability increases for the farmers they serve. This can be explained by a lower profitability starting point for smallholder farmers, as farmers in less organized food-supply chains more frequently farm at subsistence level. If further analysis substantiates this initial insight, it would have key implications for donors and investors aiming to maximize profitability increases in smallholder farming populations.

6. For the purpose of this comparison, block farm models have been excluded as their different structures and outcomes would otherwise skew the results. The EBA methodology measures the legal and institutional context for businesses operating in agriculture in 62 economies and across 12 topic areas: seed, fertilizer, machinery, finance, markets, transport, information and communication technology (ICT), water, livestock, environmental sustainability, gender and land.

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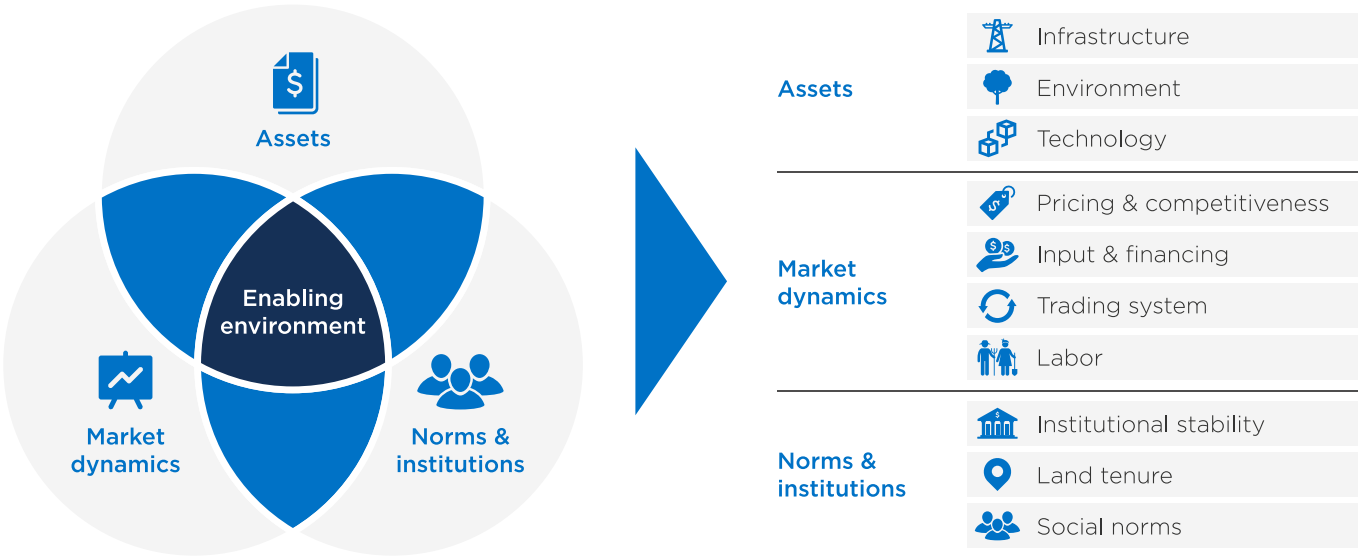
2.4 ENABLING ENVIRONMENT

As discussed in chapter 1, the long-term Farmfit vision is of a competitive marketplace whereby farmers have access to affordable and impactful services from a variety of service providers. The existence of such a marketplace requires an enabling environment to provide the key infrastructure necessary for such a market: a stable pricing system, solid land ownership regulations, access to quality inputs and financial products, strong protection of social and environmental priorities and more. In such a market, service providers can focus on their strengths while leveraging the strengths of others through partnerships.

The 'enabling environment' refers to the range of factors inside and outside the SDM operator's control that facilitate or hinder smallholder engagement for sourcing and service provision within a value chain. Most SDMs we have analyzed operate in contexts where many of these necessary building blocks are lacking, weak or unreliable. The design of an SDM should always take into consideration the enabling environment as it might initiate specific services, create risks needing management or make the SDM more expensive because the SDM operator needs to provide some of the missing pieces themselves. While the relevance of the enabling environment seems evident, we found initial evidence underlining its importance for SDMs to be successful. An instance exists when analyzing our SDM dataset against the World Bank's Enabling the Business of Agriculture (EBA) national indicators; we observe SDMs in countries with higher EBA scores offer a higher number of services. For instance, where the EBA score for mechanization is high, our work on SDMs found SDMs are more likely to offer mechanization as a service as well.

Recognizing the importance of the enabling environment for the success of SDMs, our analyses have assessed if and how SDMs are affected by key factors in the operating environment and how SDM operators have acted to overcome enabling environment challenges. Figure 9 illustrates how these factors can be grouped into three overarching dimensions of the enabling environment: assets, market dynamics and norms and institutions.

FIGURE 9: INFLUENCING FACTORS OF THE ENABLING ENVIRONMENT



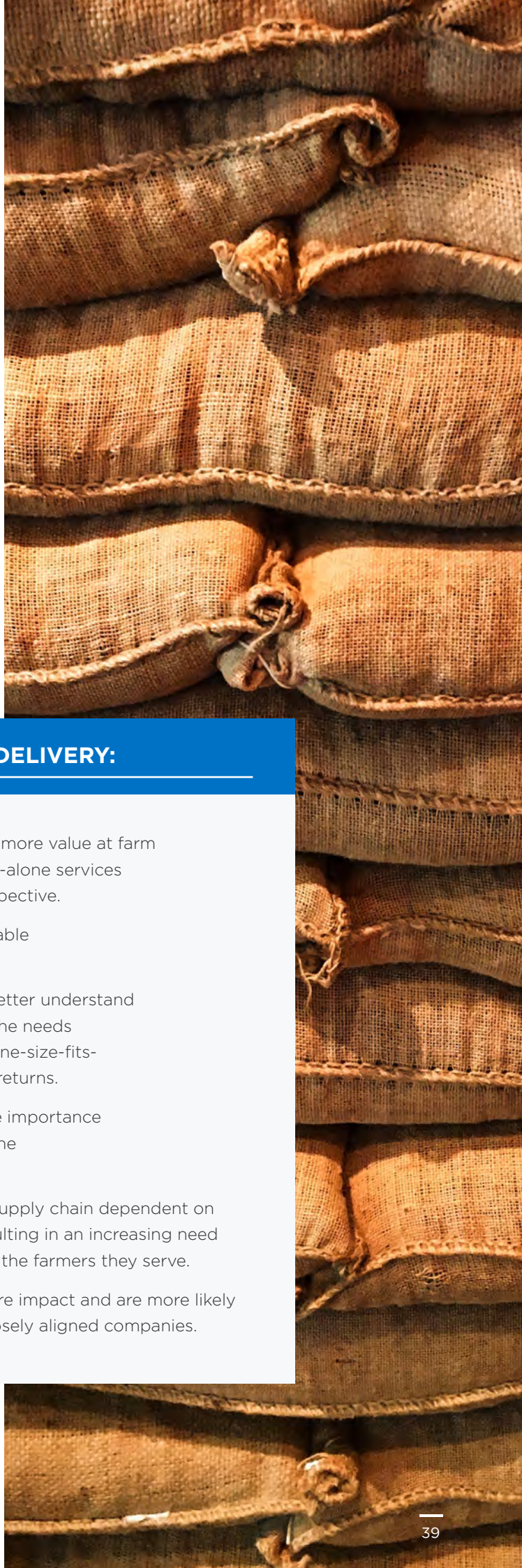
Using this framework, our analyses have supported individual companies in understanding and influencing their enabling environment; however, the enabling environment analysis remains largely qualitative and difficult to compare across SDMs. Therefore, Farmfit is currently refining its approach to systematically map the main barriers and enablers to successful service delivery as an input to policy-making discussions. By surveying companies serving smallholders in a systemized way, we will be able to provide aggregate insights on the main barriers to SDM development aiming to quantify the economic opportunity in removing these barriers wherever possible. We believe the voice of the private sector, especially the local SMEs, often goes underrepresented in shaping policy affecting the enabling environment of SDMs. With this new addition to our methodology we aim, together with our partner Alliance for a Green Revolution in Africa (AGRA), to help SDM operators individually and collectively take a more active role in shaping and enabling environment policy- and decision-making based on comparable evidence across countries and sectors.

3.0

Designing effective services to drive impact

INTRODUCTION

As decades of private- and public-sector experiences have shown, simply investing more in smallholder farmers does not necessarily lead to the intended productivity and livelihood improvements. Service providers need to carefully consider how the services they offer meet farmers' needs, how services are delivered to farmers and how these can be tailored to different groups of farmers; all while ensuring access to these services is inclusive of marginalized groups. These considerations are key to ensuring service uptake, effectiveness and ultimately a positive return on investment for farmers and SDM operators alike.



KEY INSIGHTS ON EFFECTIVE SERVICE DELIVERY:

- The provision of bundled, holistic services creates more value at farm level than the provision of only one or a few stand-alone services and is more likely to pay off from a company perspective.
- At a minimum, SDMs need to provide credit to enable farmers to access inputs and other services.
- Companies need to know their farmer clients to better understand and address farmers' needs. Tailoring services to the needs of specific farmer segments rather than taking a one-size-fits-all approach increases both farmer and company returns.
- An increasing number of companies recognize the importance of understanding gender dimensions to improve the impact and commercial viability of their services.
- Not only smallholder farmers, but also the entire supply chain dependent on their produce is vulnerable to climate change, resulting in an increasing need for companies to address the climate resilience of the farmers they serve.
- Formal, long-term partnerships tend to create more impact and are more likely to break even than models run by individual or loosely aligned companies.

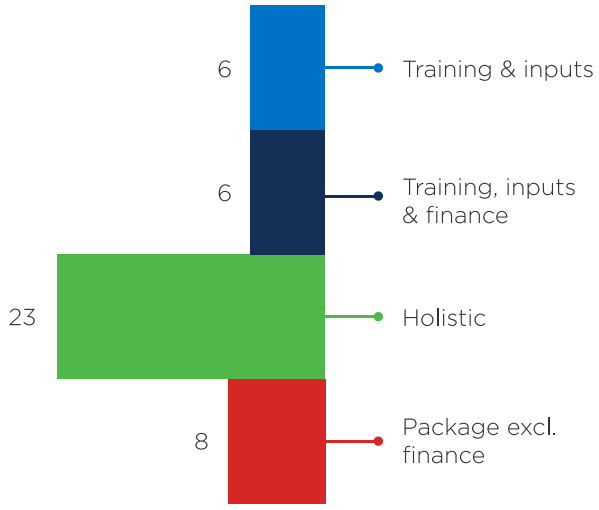
3.1 HOLISTIC SERVICES

3.1.1 INTRODUCTION

Smallholder farmers typically need access to a range of services in order to increase their productivity, professionalize their farms and ultimately improve their livelihoods. Many core services (services that can be provided on a stand-alone basis) are strengthened by the availability of complementary services (i.e., services that cannot or should not be provided on a stand-alone basis but enhance the efficacy of related core services). For instance, access to finance is a key enabler for farmers to invest in relatively costly inputs and training on good agricultural practices (GAP), which can increase the effectiveness of all other services. Recognizing this, and in the absence of a competitive market in which multiple services providers exist to meet the demand for services, many SDM operators currently provide a relatively broad range of services outside their core business. We see off-takers offering training expecting they would not get quality produce otherwise and financial service providers facilitating market access for farmers because they realize farmers will be unable to repay their loans otherwise.

The scope of services ranges from SDMs offering a single service such as training in good agricultural practices to full-fledged service packages including training, inputs and financing as well as insurance, market access or rejuvenation. We observe a trend of SDMs gradually increasing the depth and breadth of services provided over time, indicating SDM operators recognize the value of offering multiple complementary services in an integrated manner.

FIGURE 10: NUMBER OF SDMS IN DATASET BY SERVICES OFFERED



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We believe more holistic service provision holds the potential for increased smallholder impact as well as improved SDM sustainability but also risks companies straying too far from their core business; in some cases, offering services with unclear benefits to the business, threatening the sustainability of the SDM in the long term. To better understand the impact of different service bundles on the success of SDMs, we distinguish between the following types of service packages:

- ***Training and inputs:*** the most commonly delivered service across SDMs is training, often focusing on good agricultural practices. This training is almost always complemented by additional services, most notably input provision. Only a small and decreasing share of companies analyzed by IDH offer such a basic productivity package consisting of training plus inputs (e.g. fertilizer and crop-protection products).
- ***Training, inputs and finance:*** Most companies who offer training and inputs also provide the credit for (at least a part of) those inputs, enabling farmers to access these services in the first place.
- ***Holistic:*** The majority of companies[8] offer holistic services to farmers, which we define as offering training, inputs, finance and at least one other additional service, such as diversification, mechanization or setting up women's groups.
- ***Package excluding finance:*** Some companies offer services that go beyond the basic provision of inputs and training (e.g. by offering diversification services) but do not include financial services in their package. As access to finance plays a key role in enabling impactful service provision (as discussed below), we do not consider such service packages as holistic even though they might offer a variety of different services.

3.1.2 THE CRUCIAL ROLE OF FINANCE AS AN ENABLER

While farmers might run a profitable business, cash flow is often a critical issue with farmers lacking access to finance at those times of the year they most need it. This is not only an issue for farmers but for the companies sourcing from them. For example, farmers tend to harvest prematurely, generating quick cash from sales of low-quality produce to cover urgent household expenses. As a result, companies struggle to source the desired volumes that meet their quality standards, leading to lower margins and profitability.

To tackle this, SDMs often provide or facilitate access to finance for a number of purposes ranging from pre-financing inputs to long-lasting farm development loans; in some cases, even covering non-farm expenses, such as school-fee loans. All are designed to enable a farmer to run his or her farm according to good agricultural and business practices rather than letting farming decisions be dictated by short-term cash needs. Comparing the impact of the different types of service packages shows those SDMs offering packages including provision of credit realize 70-80% higher farmer income increases than SDMs without a finance component.

SDMs including credit provision realize 70-80% higher income increases for smallholder farmers *than SDMs without a finance component.*

8. The percentage of companies offering holistic service packages is likely to be higher in our sample than in the sector in general since Farmfit aims to work with innovative and impactful SDMs.

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SDMs generally offer finance either through direct provision by the SDM operator or by partnering with a financial service provider. Many off-takers are forced to provide financial services themselves simply because there is no suitable financial service provider active in the region. Off-takers most typically facilitate financing by providing inputs on credit; recovering these loans by deducting the value of the inputs (in some cases with a margin added) when purchasing the produce.

For FSPs, smallholder farmers have traditionally been difficult to access due to high transaction costs, challenges around knowing your customer and the lack of financial track records of this target group. Increasingly, however, we have seen FSPs show an interest in serving smallholder farmers. Multiple reasons for this exist: 1) technology makes it possible to more efficiently access these farmers (e.g. building on mobile money and digital platforms rather than brick-and-mortar infrastructures), 2) better data availability allows FSPs to better manage risk, identify clients and tailor financial products to specific farmer needs, 3) partnering with existing structures and systems (i.e., SDMs that themselves are becoming progressively more structured) allows FSPs to tap into existing service delivery, payments and logistics infrastructure, reducing the cost, complexity and risk of serving smallholders and 4) some FSPs are starting to see smallholder farmers not only as an underserved segment but also as a potentially huge future market as smallholders improve their livelihoods and become increasingly valuable customers for FSPs.

INNOVATION

Combining short- and long-term financial services

SDM OPERATOR:
Exportadora de Café California (ECC)

COUNTRY:
Mexico

SDM TYPE:
Sourcing-Focused, Global Trader / Exporter

COMMODITY:
Coffee

Exportadora de Café California (ECC) is a leading coffee service company with 20% of the domestic market share in Mexico. ECC has been part of the Neumann Kaffee Gruppe since 1994. After the coffee rust severely affected coffee plantations in Mexico, ECC created the program "**Por más café**" to secure the supply of coffee for years to come by supporting smallholders with a package of services in the main coffee growing states, such as Chiapas, Veracruz and Puebla.

In order to facilitate the adoption and correct application of the service package, ECC incorporated multiple financial instruments to make renovation and professionalization attractive for farmers. As well as inputs, technical assistance and planting material, smallholders receive a combination of three financial instruments:

- Long-term farm renewal for a 7-year repayment period
- Annual short-term for inputs
- Bridge loans with a grace period of two years at no interest until the trees yield coffee

In addition, farmers who rejuvenate their farm are paid for their labor while the farm is not productive.

Until 2019, more than 5,500 smallholders have made use of the services packages, renovating more than 4,000 hectares of coffee in Mexico. These farmers have more than doubled their productivity on average having positive impact on their profitability despite low coffee prices. Within the package, farmers pay for most of the services, leaving only a small part needing to be subsidized by ECC (mostly technical assistance, information services and other ad hoc needs). ECC receives a return on this investment through the increased quality and quantity delivered by these farmers. As the loans are provided by a commercial bank working with ECC and backed with a 5% first-loss guarantee fund provided by the Mexican government, ECC can share risk and scale up more readily.

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3.1.3 GOING BEYOND TRAINING, INPUTS AND FINANCE

Considering the diverse needs of smallholder farmers, it makes intuitive sense that SDMs offering more services than training, inputs and finance are more successful at improving farmer livelihoods. Our preliminary insights confirm this intuition, suggesting holistic-services packages achieve approximately a 15-percentage point higher increase in smallholder farmers' profitability than basic service packages. However, given the limited sample of 43 SDMs analyzed, this difference is not statistically significant and should be interpreted with care. Further work is needed to confirm the additional impact of holistic services. Moreover, measuring the impact of holistic services provision from a profitability perspective alone is likely to underestimate their impact. As these services often go beyond farm economics and extend to social and environmental topics, such as food security, nutrition, gender and climate resilience, we believe their impact is far broader than income increases alone.

Looking at the evolution of an average farmer's profitability in the SDM over time (represented in profit and loss (P&L)), we see the positive effects of holistic services provision only show after the first years following their introduction, as seen in Figure 11. This is logical as these services tend to focus on long-term needs and complex challenges opposed to the short-term transaction-oriented services offered in basic service packages.

Looking at the financial sustainability of holistic SDMs from an SDM operator perspective yields a similar picture, as seen in Figure 12. While requiring a higher initial investment than basic SDMs, holistic SDMs on average break even after several years (yellow line) while basic ones are on average unable to cover their costs (gray line).

This can be partially explained by the fact that holistic models are able to recover a higher share of their costs through service payments. Farmers appear more willing to pay for a complete service package meeting several of their needs and seem to be more likely to adopt good agricultural practices when offered as part of a more comprehensive package. This leads

FIGURE 11: HOLISTIC SERVICE PROVISION OUTPERFORMS OTHER PROVISION PACKAGES FOR FARMERS A FEW YEARS AFTER BEING INTRODUCED

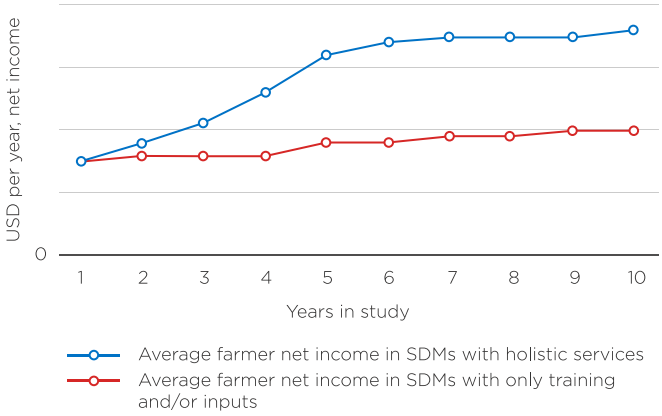
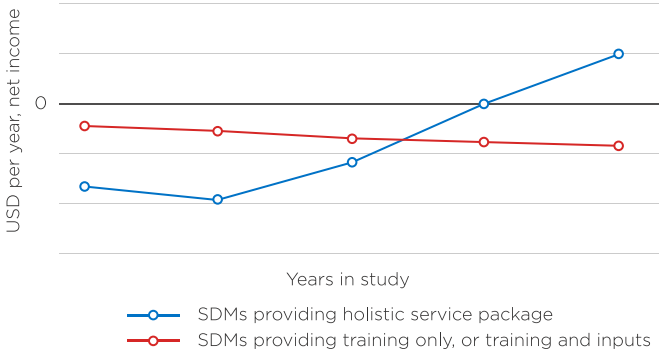


FIGURE 12: HOLISTIC SERVICE PROVISION OUTPERFORMS OTHER PROVISION PACKAGES FOR SDM OPERATORS A FEW YEARS AFTER BEING INTRODUCED



to increases in quantity and quality of production and higher and sustained margins for companies (compared to models offering only training and/or inputs).

Another potential explanation is farmers receiving holistic service packages are more satisfied with / loyal to the service relationship and as a result are willing to sell a higher share of their production to the off-taker in the SDM. Interestingly, however, we have not found any evidence to suggest loyalty levels are higher in holistic SDMs. Further research will be required to determine if this is due to the limited sample size or simply an indication that holistic services are not a primary determinant of loyalty (for further discussion on loyalty, see chapter 5).

Credit: Oscar Espinosa / Shutterstock.com

3.2 KNOWING YOUR CLIENT

3.2.1 INTRODUCTION

In the previous section we showed how the provision of holistic service packages can improve farmer and company returns. This begs the question of which services to include in such a package and what kind of farmers to whom we provide these services. In order to serve farmers in an impactful and commercially viable way, companies need to know who these farmers are, what their households look like and what challenges they face on and off the farm. SDMs targeting subsistence farmers likely need an entirely different set of services than those targeting commercial farmers.

As previously mentioned in chapter 1, we see a trend of companies increasingly collecting and capitalizing on farm-level data, but the majority of companies still do not have data on performance and impact at farm level. Next to transactional data, companies that do collect farm-level data frequently focus on assets (e.g. the amount of land owned by the farmer), behavior (e.g. adoption of good agricultural practices), household characteristics and qualifications (e.g. literacy). Few companies go a step further to collect future-oriented data, looking at the motivations and aspirations of smallholder farmers. This comprehensive approach can yield a more dynamic and comprehensive picture of the farming household and can be particularly useful in designing packages for long-term farm development. For example, the global confectionary company Mars, together with each individual cocoa farmer, is developing farm development plans reaching 5-10 years into the future; focusing not only on the farmer's ambitions to develop his or her farm but also on the needs and wishes of the household as a whole (e.g. buying a motorbike). Looking not only at where farmers are today but also at where they are going is the same approach advocated in the recent "Pathways to Prosperity" report (Mastercard Rural and Agricultural Finance Learning Lab (RAF-LL) and Institute for Smallholder Finance (ISF) Advisors, co-contributed by IDH, 2019) which looks at typical smallholder development pathways, such as from subsistence to commercializing or from commercializing to non-farm urban employment.

This section explores three strategies to better understand and serve smallholder farmers: tailoring services to farmer segments, designing SDMs accounting for gender dynamics, and addressing the climate risks threatening farmers and the supply chains and markets to which they sell.

3.2.2 SEGMENTING FARMERS

A key use of farm-level data is the ability to segment farmers as clients are segmented in other markets. Segmenting smallholder farmers has the potential to increase service adoption and willingness to pay as well as to decrease loan defaults and side-selling. As discussed, companies use data on assets, behavior, household characteristics, qualifications and motivations to segment the farmers they serve. This helps better understand farmers' needs and allows companies to tailor their services to those needs and capacities, ultimately increasing the impact on farmer livelihoods. Successful segmentation strategies minimize the required amount of data needed for collection by an SDM operator while optimizing the fit of services to the clients' needs. To support companies in efficiently segmenting farmers, IDH is currently developing a tool to define and operationalize smallholder segments.

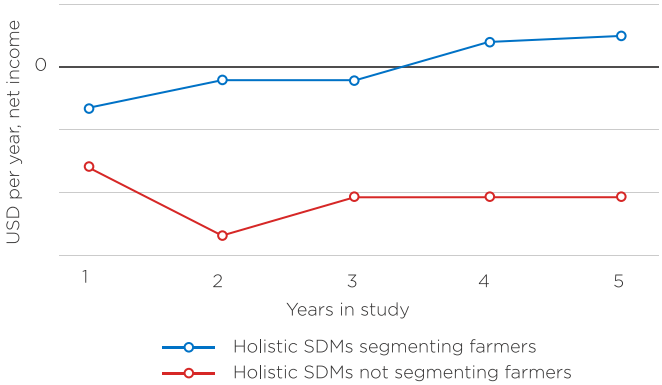
While we do not have sufficient data yet to show which segmentation strategies achieve the highest impact, IDH has found preliminary evidence that segmenting farmers in general – as opposed to providing a one-size-fits-all package to all farmers – leads to more effective service delivery and increased farm impact. SDMs segmenting smallholder farmers achieve roughly a 50 percentage-point higher profitability increase for farmers than models providing the same services to all farmers. This is likely due to more focused support on better performing farmers and services being more clearly targeted at those with the potential to use them effectively and translate these services into results.

Higher impact at farm level also translates to higher value creation for the SDM operator, as increased productivity, profitability and loyalty at farm level lead to increased sourcing and higher repayment rates. This hypothesis is confirmed by our data, reflected in Figure 13, which suggests SDMs offering holistic service packages in fact only break even if they segment smallholder farmers. As holistic service packages are generally costlier, it makes intuitive sense that companies offering such costly packages indiscriminately to all farmers struggle to recover those costs.

In practice, this often means companies only offer (some of their) services to the better performing farmers. However, some companies like Unilever Tea Tanzania Limited (UTT) are also using segmentation to identify weaker performers and improve their performance with tailored services to help them "catch up".

Other SDMs are implementing a graduation model, wherein farmers need to achieve certain performance criteria before being eligible for specific, often more expensive, complex and risky services. The aim is twofold. First, by understanding farmers' needs

FIGURE 13: FOR HOLISITIC SDMS, THOSE WITH FARMER SEGEMENTATION OUTPERFORM THOSE WITHOUT SEGMENTATION



at every stage in their journey towards becoming commercial farmers and incentivizing them accordingly, the company increases the likelihood of farmers becoming more professional. Second, by tailoring the service packages to the level of professionalism of farmers, risks and costs of offering more advanced types of services are reduced. For instance, providing long-term loans to only those farmers that have proven business management skills and have a good financial track record, reduces the risk of those farmers defaulting and thus the cost falls upon the SDM. Access to such services can also become an incentive for farmers. If farmers are eager to get a loan for which they first need to show their business understanding and good track record, they will probably be more diligent in attending trainings and repaying other loans.

While some SDMs apply such segmentation and graduation strategies to individual farmers, most apply segmentation at the levels of farmer groups and cooperatives. Next, we explore an example of segmenting and strengthening farmer organizations from Burkina Faso.

INNOVATION

Combining short- and long-term financial services

SDM OPERATOR:
Anatrans

COUNTRY:
Burkina Faso

SDM TYPE:
Sourcing-Focused, Local Trader / Processor

COMMODITY:
Cashew

Anatrans is a leading cashew nut processor in Burkina Faso exporting to international markets. With the support of IDH and FairMatch Support, Anatrans has developed a model to segment producer organizations (POs), build their capacity and incentivize and empower them to take on a bigger role in managing the supply chain, including a growing role in the SDM.

Anatrans buys raw cashew nuts from POs and tracks the quantity, quality and timeliness of each PO's delivery. While farmer training and commercial assistance is offered to all POs (which graduate from 1- to 3-star segments), additional services are only offered to POs providing a minimum quantity, quality and formal/professional management. Two-star POs receive capacity building, financial assistance and diversification services, and three-star POs receive additional support to get certification and therefore access to the premium market.

POs are thereby encouraged over time to professionalize and grow, enabling POs to graduate to access increasingly extensive service offerings and take on larger commercial responsibilities, generating additional sources of income for the POs. As the POs professionalize, they gradually take over the service delivery to individual farmers from Anatrans and become more viable business partners for off-take. As a result, Anatrans sources more cashews (increasing from 3,300 tons in 2014 to 9,200 tons in 2019) from fewer and more professional POs, reducing their sourcing costs and enabling them to focus on their core business – processing cashews.

FARMER SEGMENTATION

Clear minimum criteria

Farmer results

- More effective services, due to tailored provision

Producer organization (PO) results

- Source of revenue making them more self-sufficient
- More empowerment due to increasing local capacity and larger role in service provision

Company results

- Higher loyalty, lower defaults
- Higher service cost efficiency
- Decreased service provision required as POs take over
- More viable business partners for offtake

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3.2.3 UNDERSTANDING AND USING GENDER DIMENSIONS TO IMPROVE SERVICE EFFECTIVENESS

Gender is a key factor influencing the socio-economic dynamics at play within company work flows, farming communities and households. Since tasks, resource ownership and decision making on the farm and in the household are often (unequally) divided based on gender, it is imperative for companies to understand gender risks and opportunities to increase the adoption and impact of their services.

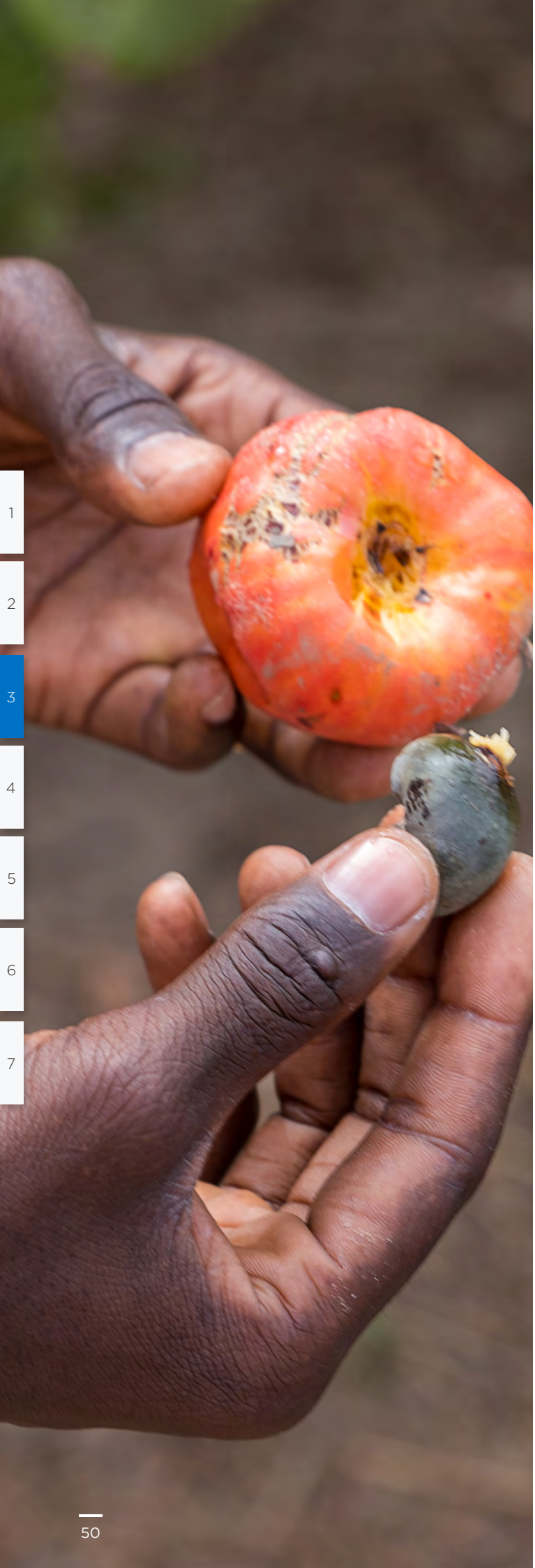
Notably, while some SDMs are designed to meet gender-sensitive services, the majority are not designed with the necessary awareness of gender-related risks and opportunities within respective companies and ecosystems. We refer to such SDMs as being "gender unintentional" (see Figure 14). In one instance, we observed women were responsible for most of the harvesting, yet they never attended trainings; best practices were passed on to them via the men. Women are frequently perceived to be good at managing the household's finances, yet trainings and loans are hardly ever provided directly to them. While these seem obvious opportunities for businesses to leverage, gender is socially and culturally embedded which makes it a complex topic as it is shaped by varying behaviors, values and attitudes across cultures, geographies and value chains. Lack of sex-disaggregated data is a common challenge along with the fact that proven best practices where gender is fully integrated into the business case is not widespread.

FIGURE 14: CLASSIFICATION OF SDMS BY GENDER POSITIONING

Gender Unintentional: The Service Provider does not take steps to understand or address the different needs and constraints of women and men in its internal processes, strategy or service design. Consequently, gender is not considered relevant to the development outcome and gender norms, roles and relations are not affected.

Gender Intentional: The Service Provider has taken steps to at least understand the different needs and constraints of women and men in its internal processes, strategy or service design with the goal of ensuring both women and men have access to resources. Such a Service Provider is 'gender aware' (i.e., there is awareness that gender is about the socially constructed roles of men and women and because of this, the life experience, expectations and needs of women and men are different and often involves inequality).

Gender Transformative: The Service Provider takes a data-driven approach to understand the different needs and constraints of women and men, tailoring services to ensure either men and women have access to resources, control over the benefits of those resources or work in an inclusive workplace. Gender transformative interventions address the structural inequalities that constitute social norms and values. Transformative interventions include increasing women's access to business leadership and giving them a voice at strategic decision-making spaces, like boards.



Using our gender tool, we apply a gender analysis to gain a solid understanding of gender roles, risks and opportunities to which companies are exposed. Companies can ensure they are not doing harm by structuring their SDM in a manner that inadvertently precludes women (and sometimes men, youth or other demographics) from accessing the services required to enhance their existing livelihood opportunities. Going beyond "doing no harm", the collection of sex-disaggregated data allows companies to better tailor services to the most relevant household members. We refer those SDMs aware of these dynamics and integrate these insights into better service design as "gender intentional" (see Figure 14). A practical example is UTT, where the sex-disaggregated data showed women were applying more adequate amounts of fertilizer and achieving higher productivity compared to men. This observation has sparked a discussion where UTT is seeking to better understand the reasons for these differences and subsequently tailor services to capitalize on this opportunity.

Finally, sex-disaggregated farmer data enables companies to actively identify and address risks and opportunities to ensure equal access and women's market inclusion. We have observed a growing number of companies including services in their SDMs to actively improve the gender balance. For instance, we have seen companies use the idea of "women collectives" to establish women farmer groups (these farmer groups become the voice for articulating women's needs). Others are providing anti-sexual harassment trainings to averse the gender risk of gender-based violence. We consider these SDMs to be "gender transformative". A potentially transformative example is with ECOM, who realized that while women in cooperatives in East Africa were reaching the levels of production needed to access leadership positions, they were prevented from doing so by lack of confidence. In response, ECOM has designed training packages tailored specifically to women including good agricultural practices, confidence building and financial literacy. Over the years we shall observe how women's leadership positions increase as a result of this intervention.

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In order to raise awareness of the business and impact potential of gender-intentional and transformative SDMs, Farmfit uses the gender tool to analyze the gender roles, risks and opportunities in a respective service providers' supply chain structure. Application of the tool has become an integral part of all SDM analyses since mid-2019. The tool focuses on making the role of women in agricultural value chains more visible, unpacking the underlying risks and opportunities and identifying trends (both at farmer and company level) a company should consider when designing its service offering. Over time, the tool generates comparable data on the performance of gender-intentional and gender-transformative models on an aggregate level. Ultimately, we aim to not only identify more examples of successful gender interventions but also to distill a clear quantified business case for gender-intentional and gender-transformative SDMs. As illustrated by the examples above, we believe gender-unintentional SDMs are not only harmful for women but fail to realize their full commercial potential from an SDM operator perspective. In the coming years Farmfit will be working to build aggregate learnings and examples of proven business cases to encourage SDM operators to implement gender intentional or transformative approaches.

3.2.4 BUILDING THE BUSINESS CASE FOR CLIMATE RESILIENCE

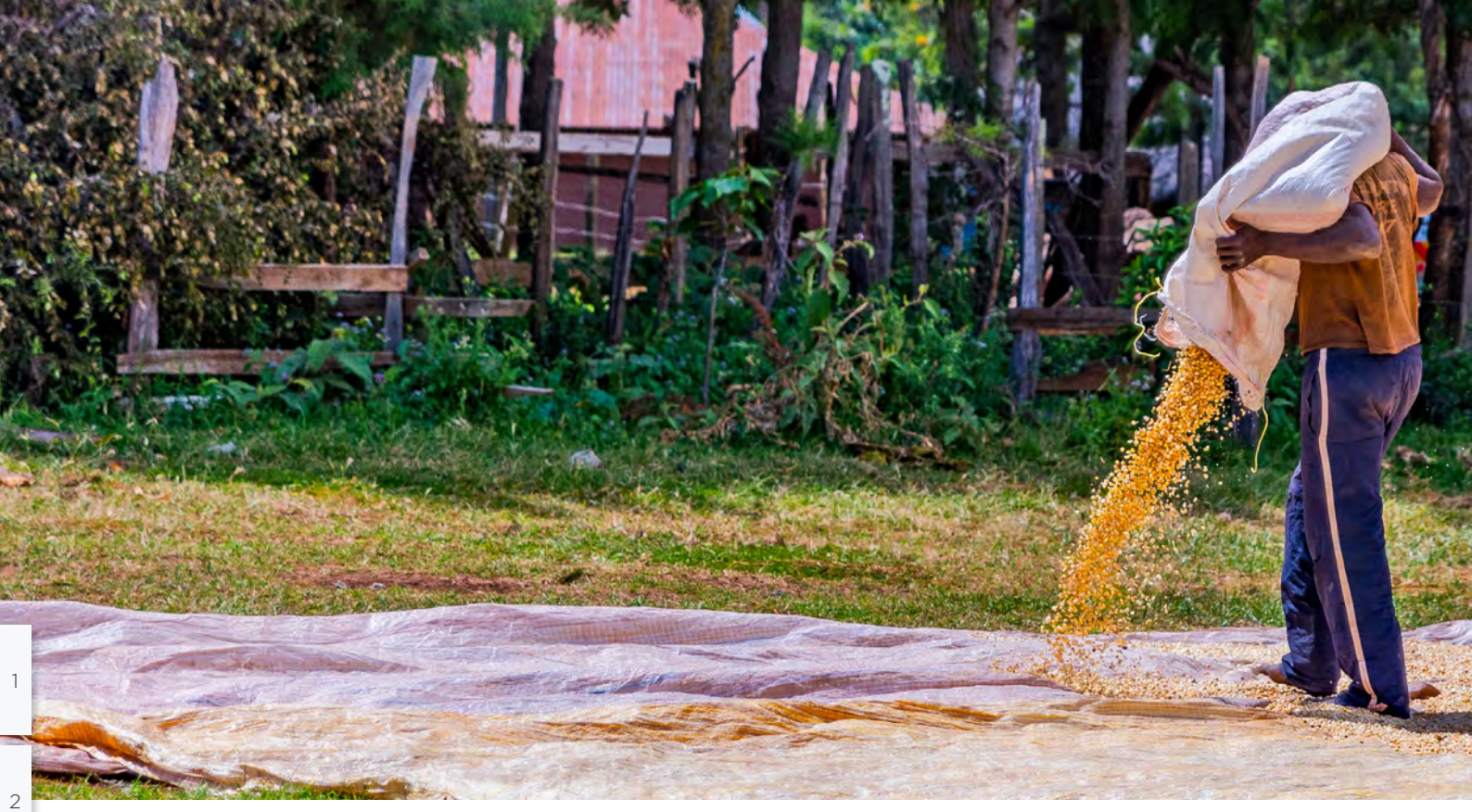
Ideal climatic conditions are essential for a healthy crop and harvest, impacting the smallholder farmers' business profitability and livelihoods as well as the competitiveness of the entire supply chain. Climate directly influences farmer yields as each crop needs specific amounts of groundwater and rainwater, levels of sunlight, adequate temperatures and stable and predictable weather conditions. Climate indirectly affects crop's health by creating breeding grounds for pests or ideal conditions for diseases to spread.

As temperatures rise, soils degrade and weather extremes become more frequent, smallholder farmers are increasingly more exposed to climate risk. If no action is taken, more frequent and larger crop losses and subsequent lower and less predictable incomes will result. These climate events not only worsen farmer livelihoods, they trickle down the value chain affecting traders, buyers, consumers and investors.

Fortunately, there are climate mitigations farmers, service providers and investors can take. SDMs are investing in a wide variety of solutions including irrigation systems, plastic mulching, agroforestry, post-harvest storage, insurance and diversification.

While we see many SDMs implementing such solutions, these are often not an integral part of the business strategy, but are mostly reliant on subsidies and often do not consider the different needs of the farmer customer base. In late 2019 we integrated the climate resilience toolkit into our methodology to assess how climate risks are affecting smallholders in an SDM and to quantify the business case for both farmers and companies to address those risks. Our first analysis demonstrates that, for most services geared towards increasing the climate resilience of farmers, the business case only becomes positive when taking a long-term perspective. Measures such as investing in irrigation, flood protection or soil rehabilitation have a clear firm business case but require a high amount of investment and entail a costly amount of risk for the company, especially if they cannot be certain of farmers' continual loyalty. Thus far, too few analyses have been conducted to identify overarching patterns or insights.

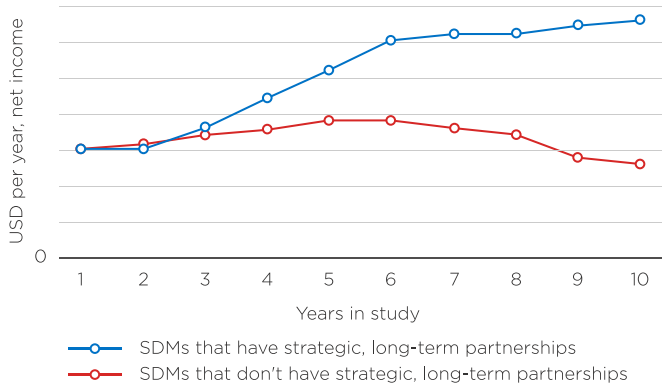
As we apply our climate approach to a growing number of case studies and gather more insights, we will become better positioned to advise SDMs on where they can best focus efforts to strengthen the climate resilience of their smallholder farmer clients. We believe this will translate into improved efficiency, profitability and reduced risks for their businesses.



3.3 PARTNERSHIPS FOR IMPACT

Providing farmers with a holistic set of services requires a diverse set of capabilities, knowledge and infrastructure. Few organizations are experts at providing training, financial services, inputs, market information and organizing aggregation and off-take simultaneously. This is particularly true for organizations whose core business is sourcing, trading and/or processing of agricultural produce rather than providing services to farmers.

FIGURE 15: SDMS WITH STRATEGIC PARTNERSHIPS HAVE GREATER IMPACT AT FARM LEVEL THAN THOSE WITHOUT



Working in partnership with other service providers allows for the creation of a more effective and efficient SDM, increasing the comprehensiveness and impact of services all the while making it more affordable. Each partner can provide the services they are best positioned to provide, a diverse set of impacts can better be captured and distributed in a partnership and the costs of a shared infrastructure can be spread over multiple partners. Still, setting up such SDMs does not come without challenges, as will be discussed later in this section.

Based on the SDMs we have analyzed to date, we have found SDMs built around partnerships have a greater impact on farmer livelihoods, but only if the partnerships are designed for the long term.

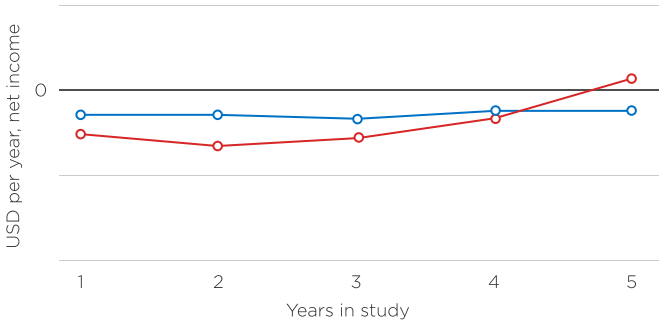
The majority of companies whose SDMs we have analyzed work together with partners bringing complementary strengths and services. While most SDMs involve several partners working together, it appears the nature and performance of these partnerships differ in terms of how formal and stable these partnerships are. Figure 15 shows SDMs with strategic partnerships (i.e., formal partnerships with at least a 3-year horizon) tend to create more impact at farm level, especially in the long term. This is likely due to these partnerships being able to offer a broader range of services as well as higher quality services, with each company focusing on their individual core competencies.

It remains that achieving positive financial returns and farm-level impact takes time for all SDMs. Services need to be rolled out, farmers need to see the value of adopting and implementing new practices and inputs and crops needs to respond to these new conditions before yields and quality will improve. In turn, the actual effectiveness and efficiency of services becomes clear only after a couple seasons and subsequent redesigning of services to reach profitability will take even longer. Creating an SDM both impactful and financially sustainable is a significant challenge for a single company, let alone for a consortium of partners. While partners can complement each other in terms of expertise and competencies, these partnerships will bring with them additional complexity.

Accordingly, to be successful at jointly delivering services to smallholders, partnerships ideally should be designed with a shared long-term vision. Less formal, transactional or opportunistic partnerships are arguably less likely to weather the difficult initial years of setting up an SDM and completing a trial-and-error process that strengthens rather than weakens the partnership.

These findings are confirmed by our analyses, showing that providing services in a strategic partnership requires a higher upfront investment but eventually increases the chance of recovering the costs of service provision.

FIGURE 16: SDMS WITH STRATEGIC PARTNERSHIPS HAVE GREATER PROFITABILITY OVER TIME THAN THOSE WITHOUT



INNOVATION

Completing the puzzle through strategic partnerships

SDM OPERATOR:
Syngenta

COUNTRY:
Kenya

SDM TYPE:
Service-Focused, Input Provider

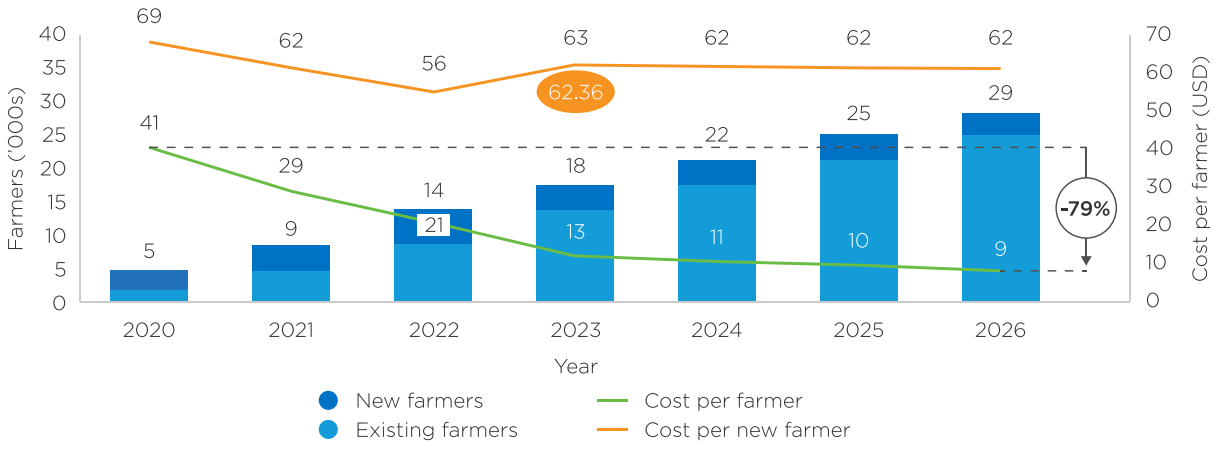
COMMODITY:
Tomatoes & Potatoes

Tomato and potato farmers in Kenya can significantly increase their yields (and incomes) if they use certified, hybrid seeds and apply good quality fertilizers, insecticides and fungicides. However, their yields remain low because most farmers are currently unable to afford these products.

Syngenta, a global producer of high-quality seeds and crop protection products, has launched the Mavuno Zaidi project in Kenya to work with tomato and potato farmers to address the affordability roadblock. The project currently works with approximately 26,000 farmers with the goal of scaling up to 100,000 farmers in the foreseeable future. Syngenta has partnered with fertilizer providers, financial service providers and off-take intermediaries to establish a partnership-based SDM to engage with these farmers. Through the SDM they receive a full range of services including training, finance (loans), crop insurance, access to a package consisting of hybrid seeds, fertilizers and crop protection and market linkages. Tomato farmers in the SDM can improve their income per acre by up to five- to six-fold while potato farmers can potentially increase per acre income up to three-fold. The business case for Syngenta is positive, as farmers are now able to purchase the inputs package consisting of Syngenta's hybrid seeds and crop protection products; without the complementary services provided by other partners, these Syngenta products would be out of reach for most farmers in the SDM. While setting up the SDM is a cost to Syngenta, these costs are recovered through their revenues from sales to these farmers.

An ecosystem of partners is needed to deliver the services and Syngenta plays a key facilitating and coordinating role in this ecosystem. Playing this role requires investments on the part of Syngenta as shown below. It costs Syngenta approximately USD 62 to bring a new farmer into the SDM, which decreases significantly since farmers only require training during the first two harvest cycles. As a result, Syngenta is able to break even and make a profit on a farmer who continues in the SDM into year two (third harvest cycle onwards).

Cost to bring a new farmer into the SDM



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While functioning strategic partnerships have clear advantages, several companies interviewed for this report commented on the challenges of identifying the most appropriate partners and establishing the relationships needed. These processes take significant time and cost investments to "get it right". In some cases, companies report that the business ecosystem in their context lacks the companies needed to form partnerships, such as financial or technology service providers. In other cases, partners report their attempts at forming partnerships have failed with significant costs incurred in terms of time and money invested and processes that have not produced a return.[9] UGACOF Ltd. highlights – from their experience of trying to establish partnerships to support their farmers in diversifying production (to increase their incomes and resilience) – partnerships are crucial but so too is the need for an SDM operator to remain in control of their supply chain to ensure effective communication with farmers.

In summary, long-term partnerships appear to be well suited to deliver effective services to smallholders yet bring with them challenges of finding the right partners, degree of control and levels of involvement and coordination.

9. This is a reference to interviews with partners who would prefer not to be publicly quoted.

4.0

Driving efficiency in SDMs

INTRODUCTION

In chapter 3 we outlined how companies are improving their effectiveness in increasing farmer productivity and profitability. In this chapter, we look at how to offer effective services in a cost-efficient manner to increase the commercial viability of SDMs.

Serving smallholders has historically implied high client numbers and low client value as smallholders are dispersed and costly to source from and/or to serve. Therefore, it is essential to drive down transaction costs relative to transaction value.

KEY INSIGHTS ON EFFICIENT SERVICE DELIVERY:

- Cost efficiency is a key determinant of long-term sustainability in SDMs due to commonly high transaction costs relative to customer value in smallholder farming.
- More efficient service delivery can contribute to more attractive pricing of services for farmers and thus a better cost-benefit ratio.
- Costlier services do not automatically translate into higher impact in the form of either productivity or profitability increase at farm level.
- Mechanisms for improving cost efficiency can include:
    - ***economies of scope:*** expanding the scope of services by bundling or utilizing existing infrastructure, data and sourcing relationships to create savings and provide a broader range of services to farmers, sometimes facilitated through formal partnerships and/or platforms.
    - ***economies of scale:*** expanding the number of farmers who receive services, or the volume of produce sourced from farmers (where appropriate), which reduces the cost per farmer and/or MT of produce if overhead costs grow at a slower rate.
    - ***operational efficiency gains:*** improving how services are delivered to farmers such as digitizing services, tailoring services to recruit and retain farmer segments and targeted last-mile service delivery improvements through the empowerment of lead farmers and farmer organizations.
    - ***influence on the enabling environment:*** collaborating with private and public organizations to advocate for policy changes that positively impact the environment in which an SDM is operating.

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4.1 WHY FOCUS ON COST EFFICIENCY?

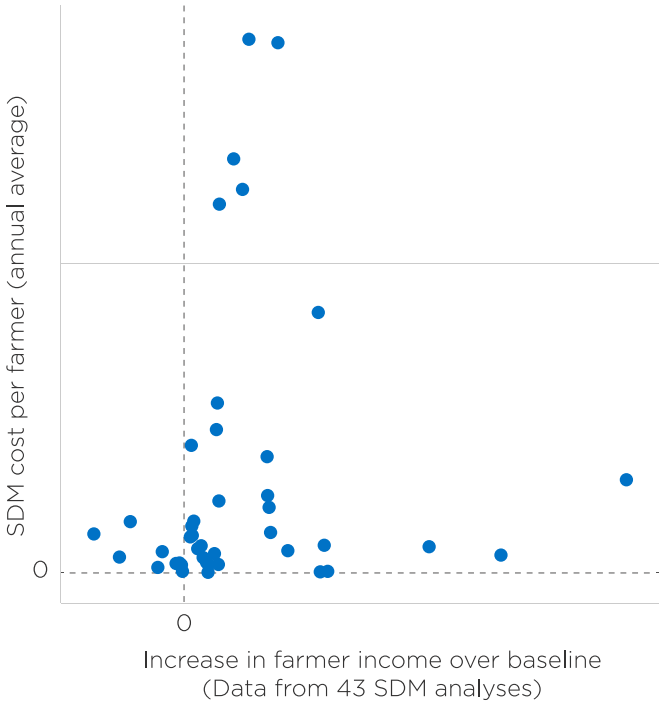
Cost efficiency refers to the costs incurred by SDM operators of delivering services measured as cost per farmer and/or cost per ton of produce sourced from farmers (the latter relevant only for sourcing-focused SDMs). Efficiency is driven by a variety of factors, such as scale, technology and different delivery modes. By comparing the SDMs in our dataset we seek to identify these drivers of efficiency and identify trends and innovations.

Ultimately, a long-term sustainable SDM needs cost efficiency for several reasons. The farmers, as the primary clients of SDMs, generally face challenging economics, have limited disposable income to spend on purchasing goods and services from the service provider and are typically running relatively small farms geographically dispersed and thus relatively expensive to reach. In addition, SDMs often operate in the context of relatively weak enabling environments. Compounded, these factors tend to make service delivery to smallholder farmers in such contexts relatively complex, costly and limit the ability to recover costs by charging farmers. Therefore, achieving cost efficiency is an important factor to making SDMs more sustainable in the long term. More efficient service delivery can contribute to more attractive pricing of services for farmers and thus a better cost-benefit ratio; a more efficient model is easier to finance sustainably in the long term. Of course, efficiency should not be achieved at the expense of other key objectives such as scale (number of farmers reached) and impact (effectiveness of the services provided).

4.2 KEY INSIGHTS ON COST EFFICIENCY

Based on the SDMs we have analyzed to date, we have observed costs of service delivery vary widely, including those between SDMs operating in the same crop or geography and offering similar services. Across the SDMs in our dataset, costs vary from less than USD 10 per farmer per year to well beyond USD 1,000 per farmer per year. While some of these extremely high costs might be justified, Figure 17 shows higher cost per farmer does not automatically translate into higher impact in the form of either productivity or profitability increase at farm level. Our data suggest there is no relationship between the costs of services provided to farmers and the effectiveness of these services. We therefore believe learnings across SDMs and identification of key drivers for improving efficiency offer substantial opportunity for efficiency gains within and across SDMs.

FIGURE 17: SDM COST PER FARMER HAS NO CLEAR RELATION TO INCREASE IN FARMER INCOME



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Broadly, we see four different ways to make use of this opportunity for efficiency gains:

4.2.1 ECONOMIES OF SCOPE

Several businesses analyzed have achieved service delivery efficiency gains by increasing the scope of the SDM which creates efficiency by using the same resources for delivering several different services. In these cases, services are either bundled with others or existing infrastructure is utilized to create savings. Therefore, the cost of delivering these services together is lower than the cost of delivering each service separately.

SDMs can often create efficiencies by building on an existing sourcing relationship where infrastructure, data and relationships with farmers are already developed and can be leveraged. Many SDMs we have analyzed to date are sourcing-focused SDMs. We believe a primary reason for this prevalence of sourcing-focused SDMs are these efficiency gains from building an SDM on an already-existing sourcing infrastructure. The lack of an enabling environment and the relatively high cost of serving smallholder farmers can be partially offset by: 1) leveraging the already existing structure (e.g. field staff, data systems, logistics and distribution facilities and payment arrangements) and 2) building an SDM around that existing system. One of the many examples we have seen of the efficiency gained by this strategy is ECLOF Kenya, a microfinance bank providing loans to dairy farmers who are members of partner cooperatives. By building on the existing infrastructure of the dairy cooperatives, ECLOF Kenya can onboard customers at lower costs and monitor the performance of their farms more closely.

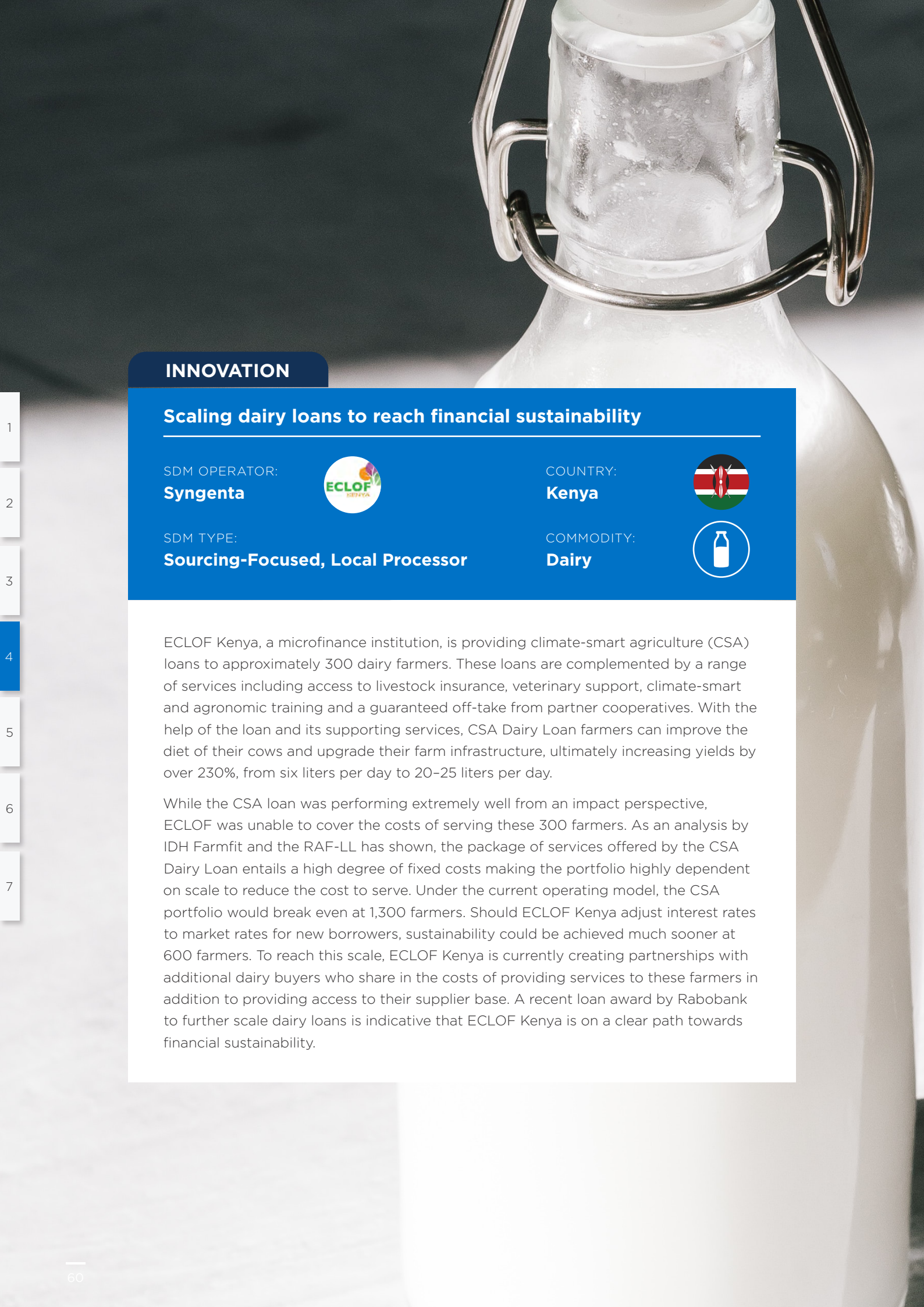
Another way of leveraging economies of scope is by bundling multiple services together, creating a more expansive SDM providing a broader range of services to farmers; by doing this through the same channel and infrastructure, the shared infrastructure and overhead costs (e.g. monitoring and evaluation (M&E) systems, management costs and recruitment costs) can be shared over more services, reducing their costs on an individual service level.

Finally, scope efficiencies can be achieved by working through partnerships or platforms, whereby multiple service providers offer only those services in their core business, thus providing the most efficient and effective services while sharing a common SDM infrastructure. Partnerships and platforms are further explored in chapter 6.

4.2.2 ECONOMIES OF SCALE

We define scale as increasing the reach of an SDM, which is most typically expressed in terms of farmers reached but can also be measured in terms of volume sourced from those farmers. A key cost driver especially in smaller SDMs serving fewer farmers is overhead, which typically includes items (e.g. SDM management staff and headquarter infrastructure). As SDMs become larger, these overhead costs tend to rise at a significantly smaller rate than the growth in the number of farmers, thus generally decreasing the overhead costs; specifically, the costs per farmer. Our data indicates that on average, SDMs with a scale of more than 10,000 farmers have 30% lower overhead costs per farmer than SDMs engaging less than 10,000 farmers.

Similarly, certain one-time costs specific to an individual service such as the development of a training curriculum and input package prior to the provision of extension services decrease per farmer when the number of farmers reached increases.



INNOVATION

Scaling dairy loans to reach financial sustainability

SDM OPERATOR:
Syngenta

COUNTRY:
Kenya

SDM TYPE:
Sourcing-Focused, Local Processor

COMMODITY:
Dairy

ECLOF Kenya, a microfinance institution, is providing climate-smart agriculture (CSA) loans to approximately 300 dairy farmers. These loans are complemented by a range of services including access to livestock insurance, veterinary support, climate-smart and agronomic training and a guaranteed off-take from partner cooperatives. With the help of the loan and its supporting services, CSA Dairy Loan farmers can improve the diet of their cows and upgrade their farm infrastructure, ultimately increasing yields by over 230%, from six liters per day to 20–25 liters per day.

While the CSA loan was performing extremely well from an impact perspective, ECLOF was unable to cover the costs of serving these 300 farmers. As an analysis by IDH Farmfit and the RAF-LL has shown, the package of services offered by the CSA Dairy Loan entails a high degree of fixed costs making the portfolio highly dependent on scale to reduce the cost to serve. Under the current operating model, the CSA portfolio would break even at 1,300 farmers. Should ECLOF Kenya adjust interest rates to market rates for new borrowers, sustainability could be achieved much sooner at 600 farmers. To reach this scale, ECLOF Kenya is currently creating partnerships with additional dairy buyers who share in the costs of providing services to these farmers in addition to providing access to their supplier base. A recent loan award by Rabobank to further scale dairy loans is indicative that ECLOF Kenya is on a clear path towards financial sustainability.

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4.2.3 OPERATIONAL EFFICIENCY

Various SDM design options already discussed in this report can also drive SDM cost efficiency. We highlight the following three examples: the use of technology, the strategic segmentation of farmers and the use of cooperative or farmer group structures to deliver services.

Technology: Technology is playing a crucial role in providing services to smallholders efficiently. Examples include: digital extension; the provision of market and weather information; the development of credit scores that increase the availability of financial services to "risky" farmers; index-based insurance; digital payments; management information systems managing inputs and payments for farmers; and e-commerce platforms. While it seems intuitive that technology can reduce the cost of service provision, our analyses have shown that for the majority of SDMs, the business case for digitization comes from improved service design and therefore higher effectiveness (e.g. through a Farmer Management Information System) as well as increased transparency and lower risk (e.g. through digital payments). Direct reductions in costs to serve farmers through digitization often do not materialize as the digital layer is added atop the physical service infrastructure rather than replacing it.

Recruitment, selection and segmentation: As discussed in chapter 3, offering tailored service packages to different segments of farmers can be a strategy to improve the effectiveness of the delivered services. Similarly, segmentation can help drive down the cost of service provision per farmer and (for sourcing-focused SDMs) the cost per ton of raw material sourced. Using minimum criteria to select farmers to work with requires a higher upfront investment but ultimately results in a lower cost per ton of produce sourced from these farmers, as individual farmers make better use of the services and deliver a higher share of their produce to the SDM operator. Babban Gona in Nigeria is an example of a company that places high emphasis on the rigorous selection of smallholder farmers resulting in high repayment rates for their input loans and high capture rates (i.e., the percentage of a farmers' total production sold to the buyers in the SDM). Going beyond farmer selection, several service providers (e.g. cooperatives supported by Root Capital) are furnishing tailored service packages to different segments of farmers. Beyond increasing impact, this can substantially reduce the costs per farmer served as more expensive services are only provided to farmers who have proven to have the knowledge and means to use the services successfully and deliver on their commitments to the SDM operator.

Empowering farmer groups or lead farmers: A common strategy in SDMs to cut costs and limit organizational complexity is to (gradually) transfer the responsibility for service delivery to lead farmers or farmer groups. We see this strategy being employed with cooperatives (e.g. Cargill in Côte d'Ivoire), "clusters" such as the ones set up by Jungle Nuts in Kenya (see Innovation box) or informal farmer groups (e.g. Babban Gona in Nigeria). Through empowering farmer groups to take over service provision (using a model like Anatrans described in chapter 3), Olam in Ivory Coast reduced the costs per ton in its cashew SDM by 25%. While the cost-saving potential of working with farmer groups is clear, the strategy leaves the SDM operator with a lower degree of control over service delivery to and sourcing from the farmers, potentially resulting in lower quality (of services and produce) and capture rates. For example, Neumann Kaffee Gruppe prefers to work directly with farmers wherever possible, even though this entails higher costs and organizational complexity for the off-taker. Whether working through farmer groups is an advisable strategy depends on the level of professionalism and trustworthiness of the farmer groups, the importance of crop quality and transparency to the off-taker and the ability and willingness of the SDM operator to efficiently deliver services themselves.

INNOVATION

Efficiency through clusters and digitization

SDM OPERATOR:
Jungle Nuts

COUNTRY:
Kenya

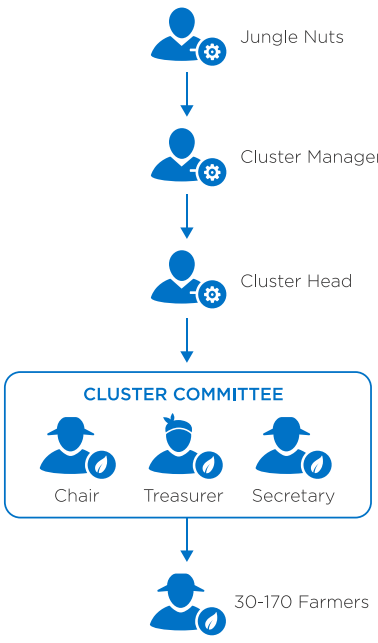
SDM TYPE:
Sourcing-Focused, Local Processor

COMMODITY:
Macadamia

Jungle Nuts is a leading nuts processor sourcing nuts from over 33,000 smallholder farmers in Kenya to produce five nut-based products: macadamia nuts and oil, cashew nuts, butter and bio-briquettes. Together with Intersnack, FairMatch Support and IDH, Jungle Nuts has developed a buying strategy for fully traceable and high-quality macadamia nuts through a model in which they organize individual out-grower farmers scattered in seven different regions of Kenya into clusters to help create a more effective and efficient engagement and service delivery mechanism. The clusters take over sourcing and service delivery operations previously carried out by Jungle Nuts and its partners. Compared to traditional Kenyan cooperatives, the clusters have the advantage of functioning as legal entities, thereby avoiding some of the complications often arising in cooperatives (e.g. high membership costs for farmers, debts or other financial risks).

The cluster model is enabled and supported by Jungle Nuts' M-Shamba system, which traces the quality and quantity of product delivered by each farmer and digitizes payment and credits to smallholder farmers. As a result, Jungle Nuts is able to make sourcing and service decisions based on real-time information and farmers benefit from almost instant payment and credit, increased transparency and up-to-date market information. This comprehensive service package has led farmers to sell an increasing share of their production to Jungle Nuts improving capture rates from 30% to 50% of the farmers' production.

FARM CLUSTERS - WHAT ARE THEY AND HOW DO THEY OPERATE?



In 2017, Jungle Nuts started the implementation of the cluster system to organize organic production and provide services in a more efficient way:

- The clusters are groups of a minimum 30 farmers and are legally registered.
- Clusters are membership groups with a common interest, within the same geographical zone and part of the same community.
- Clusters are headed by three members that form a committee with a chair, a secretary and a treasurer. At least one of the members of the committee is a female farmer.
- The members of the cluster committee receive a commission per kilo of nuts sourced, as they have an active role.
- Each cluster is managed by a Cluster Head, and agent of Jungle Nuts who functions as extension officer and buyer.
- The cluster members meet at least once a month to exchange experiences.
- The cluster has its own smartphone, SACCO and J-Hela accounts to manage savings collectively.
- Jungle Nuts transfers the bonuses and awards to the cluster account.

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4.2.4 IMPROVING THE ENABLING ENVIRONMENT TO DRIVE EFFICIENCY

So far, each of the four ways to drive efficiency is within the direct control of the SDM operator. To drive efficiency, the SDM can provide more services through the same channels, offer bundled services to the same farmers, partner with other service operators, increase the number of farmers or focus on achieving operational excellence through, for example, adopting new technologies. However, there is one way through which efficiency gains are less direct and more difficult to achieve and measure. SDMs operate in an enabling environment (as discussed in chapter 2) and when areas of these enabling environments are undeveloped or underdeveloped they can prevent SDMs from delivering services efficiently. For instance, certain innovative digital services are impossible without the infrastructure and policy environment to support technology and a lack of quality infrastructures, such as roads, can create prohibitive access and cost barriers to serving remote farmers affecting how well an SDM can work in a particular region or geography. Since these are often public goods, the ability of an SDM to recover investments made to improve the enabling environment is unlikely.

While SDM operators can lobby government for enabling environmental changes, it is often beyond the scope of individual SDM operators to improve the enabling environment themselves as they are unable to control or influence building roads and writing laws impacting their SDMs. However, organizations, such as IDH and its partner AGRA convene with private and public sector players to provide a contributory role in advocating for changes to positively impact the overall enabling environment in which SDMs operate.

4.3 LOOKING FORWARD

Chapter 4 has identified ways of thinking about efficiency and several methods to improve efficiency within SDMs. We will continue to work with our partners to explore ways of improving the efficiency of the SDMs designed and implemented. We will create more data and insights on the exact costs and benefits from using technology to support service providers better in making informed choices in technological investments and we will stimulate the creation of new innovative partnerships within and between value chains to share and drive down costs.

5.0

Financial sustainability and attracting investments

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INTRODUCTION

As previously discussed, cost efficiency and effectiveness of service delivery are critical to the success of SDMs. But in order to reach scale (i.e., to ensure increasingly more farmers have access to affordable, high-quality and impactful services to improve their livelihoods), SDMs will need the ability to attract investments ranging from high-impact, low-cost donor funds to higher-return, higher-cost commercial finance.

As referenced in chapter 1, financing can be challenging for service providers working with smallholder farmers to obtain. The recent Pathways to Prosperity report [x] indicates a USD 100 billion financial gap exists for agricultural small and medium enterprises (SMEs) in sub-Saharan Africa and a USD 55 billion gap per year for smallholder farmers in the same region.

The difficulty facing SDMs in securing investments is not only caused by the lack of tailored finance to the sector but also due to the majority of SDMs not having a demonstrably sustainable business model.

To secure investments, SDMs need to demonstrate:

- *Commercial viability*
- *Positive impact on farmer livelihoods*
- *Scale (current or realistically achievable)*

To secure investments, SDMs require:

- A proven business model commercially viable at current or (realistic) future scale, including a solid analysis of key risks and sensitivities to factors, such as fluctuating yields or market prices.
- Proven impact on farmer livelihoods and other sustainability dimensions, including gender equality and environment impact considerations. While proof of impact was a requirement exclusive to donor funding and concessional loans, we observe a trend of commercial investors increasingly looking for sustainability returns or, at a minimum, requiring adherence to the "do no harm" principle.
- A minimum size and realistic growth or scaling strategy to provide the impact at scale sought by investors and donors and to reach the "minimum ticket size[10]" required.

Note the relative importance of the above requirements depends on the investor's impact-return appetite. While more commercial investments require a higher financial return and sometimes lower impact, concessional and donor funding generally have a higher impact requirement and place less emphasis on full commercial viability of the business. Investments need to be complemented with investors with a matching impact-return appetite.

Having discussed strategies to increase the impact of SDMs in chapter 3, this chapter will focus on ways to assess and increase commercial viability, the paramount condition for securing investment.

10. Minimum ticket size refers to the smallest amount of investment an investor / donor is willing to provide, designed to ensure the costs of closing a deal remain minimal relative to the size of the investment itself.

5.1 KEY INSIGHTS ON FINANCIAL SUSTAINABILITY

In our analyses we distinguish broadly between two types of revenue streams SDMs can generate and two types of sources through which they are funded. The first distinction is key to understand the actual sustainability of service provision (as many services generate value that might not be recouped directly through service payments, rather capturing value created elsewhere). The second is important in order to grasp to what extent different types of SDMs are relying on donor funding and under which conditions SDMs are to develop into commercially viable and impactful business models.

1. **Revenue streams**
    a) Payments for services
    b) Value accruing on the sourcing side of the business
2. **Funding sources**
    a) Commercial financing (credit, equity investments)
    b) Donor funding (most often grants, sometimes subsidies)

As identified previously, SDMs that are profitable based on service payments by farmers alone are investable, sustainable and likely create enough value for farmers to cover SDM operating costs. However, based on our analyses we observe most SDMs are unable to break even. On average, we see SDMs recovering 25% of their costs through revenues generated from direct payments for the services they provide and an additional 18% is covered by attracting grant funding to activities relevant to donors. Whether and how the remaining costs are covered remains largely unclear, as visualized by the sizeable gray area in the following graph (see Figure 18). While sourcing-focused SDMs might still be sustainable and investable through increased margins on sourcing activities, service-focused SDMs have the challenge to break even solely based on service revenues (and potentially donor funding). This is particularly challenging for SDMs working with scattered smallholders at or near subsistence level, resulting in high transaction costs and low ability for farmers to pay for services. As farmers professionalize, increasing their productivity and diversifying into other crops, the financial viability of service-focused SDMs could increase significantly.

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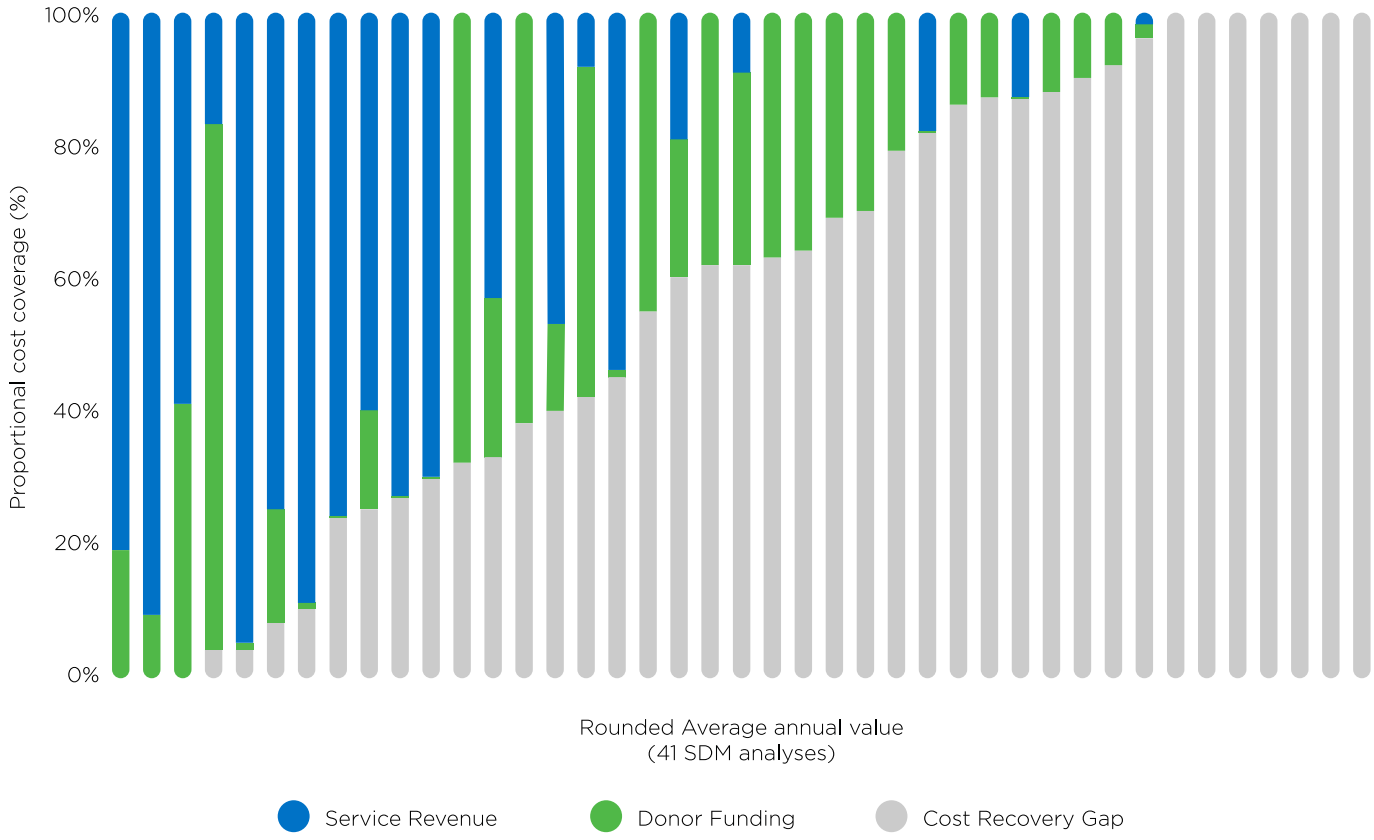
FIGURE 18: SHARE OF SERVICE COSTS COVERED BY SERVICE REVENUES AND DONOR FUNDING, PER CASE



Based on the list of revenue sources identified in Figure 18, we see three main strategies for SDMs to improve their financial sustainability: boosting and quantifying the indirect benefits of service provision which accrue on the sourcing side of the business, increasing service revenues and improving financial management and structure[11].

Systematically quantifying costs and benefits (including benefits to the sourcing operation) is key to understand, monitor, improve and demonstrate commercial viability.

11. Logically, there is the option of increasing or maintaining a reliance on donor funding to cover costs. Since we do not believe such a dependence is desirable for businesses or a more sustainable ecosystem overall, we discount this option.

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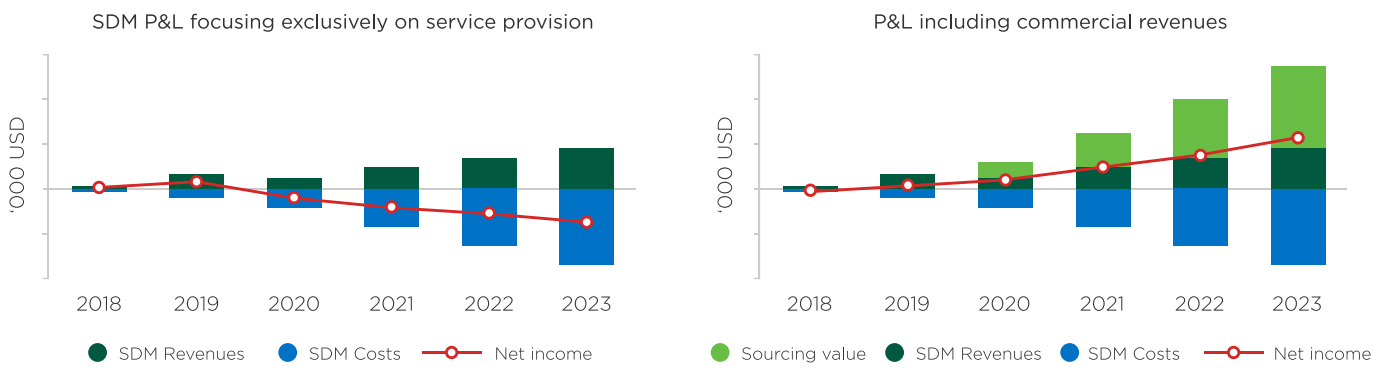
5.1.1 RECOVERING SERVICE COSTS THROUGH SOURCING GAINS

As described in chapter 1, many SDM operators are willing and potentially able to cover part of the costs of operating an SDM from revenues generated elsewhere in their organization. For instance, by increasing volumes, quality and sourcing efficiency, an SDM can create value to the sourcing department. In some cases, customers of SDM operators (e.g. consumer-facing brands purchasing from traders and processors who operate SDMs), may cover part of an SDM's costs as part of their sustainability commitments and the value of achieving these justify the investment in an SDM.

For many sourcing-focused SDMs, significant value generation in other parts of the business is needed to cover costs of service provision. Typically, it is challenging to quantify and forecast in detail the value an SDM provides to SDM operators' sourcing operations and thus whether the investment in farmer services is worthwhile. This is often due to a lack of data, companies' reluctance to share commercially-sensitive data and a lack of integration between the SDM and sourcing teams of SDM operators. However, in a subset of SDM analyses conducted, we were able to assess this aspect of the SDM in detail. Based on these analyses, we believe many SDMs likely generate (more than) sufficient value on the sourcing side of their businesses to cover the costs of service provision to smallholders.

The graphs in Figure 19 exemplify how quantifying the value SDMs generate for the sourcing side of the business can yield a very different view of business model viability. For Union Service Stores Company Limited (USSL) in Tanzania, our profit and loss modelling focused exclusively on service provision (left graph). Since farmers and cooperatives are hardly charged for the training, inputs and transportation services they receive, the service provision by itself is loss-making. However, by providing services directly to farmers, USSL is able to increase the productivity and capture the rate of farmers, thus sourcing a higher quantity of produce from the same farmer population while using an existing infrastructure. Moreover, the infrastructure and farmer relationships developed for the service provision enable USSL to purchase maize directly from the farmers, thereby eliminating middle-men and avoiding a "margin-on-margin" scenario. As the P&L in the right graph shows, these benefits to the sourcing business of providing services to smallholder farmers more than justify the costs for USSL – provided they are able to achieve the targeted productivity and direct capture rate with the farmers operating in the SDM.

FIGURE 19: P&L COMPARISON FOR USSL WITHOUT (LEFT) AND WITH (RIGHT) ACCOUNTING FOR VALUE GENERATED



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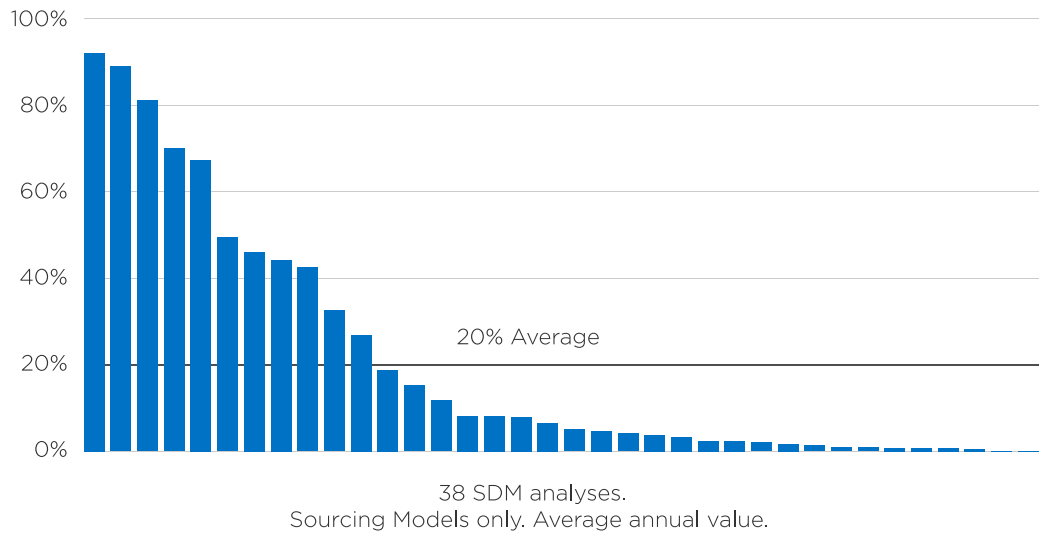
For SDMs where we are unable to quantify the sourcing benefits, we calculate the costs of service provision as a percentage of the value of the product sourced. This calculation serves as an indication or proxy of financial sustainability. For example, if a company sources cassava worth USD 100 from a farmer and spends USD 10 on serving that farmer, this would be expressed as a service cost of 10% of the value sourced.

FIGURE 20: SERVICE COSTS AS PERCENTAGE OF VALUE OF PRODUCE SOURCED FROM FARMERS



The graph in Figure 20 shows this percentage varies widely across SDMs but averages 20% across SDMs. These 20% costs need to be covered by (solely or in a combination of) increased sourcing volumes and quality, decreased transaction costs and in some cases, sustainability premiums from buyers. Given margins in many value chains are often slim, especially for traders and processors, it is questionable whether companies are able to generate enough value in their commercial and sourcing activities to fully cover the cost of service provision, which is especially true for the companies represented by the bars on the left side of the graph in Figure 20. Simultaneously, we see approximately half of the SDMs analyzed spent 5% or less of the value of produce sourced on services, suggesting it could be feasible to recover these costs.

While covering the costs of service provision with the value generated on the sourcing side of the business can be a successful strategy, it entails an inherent risk for SDM operators of relying on the capture of farmers' produce. Most costs of an SDM are incurred before or during the growing season (e.g. providing training and inputs), whereas the benefits to the sourcing operation only materialize after the harvest. Consequently, a bad harvest or a high degree of side-selling can result in significant losses for SDMs that rely on increased margins in their sourcing operations to cover (a share of) costs.

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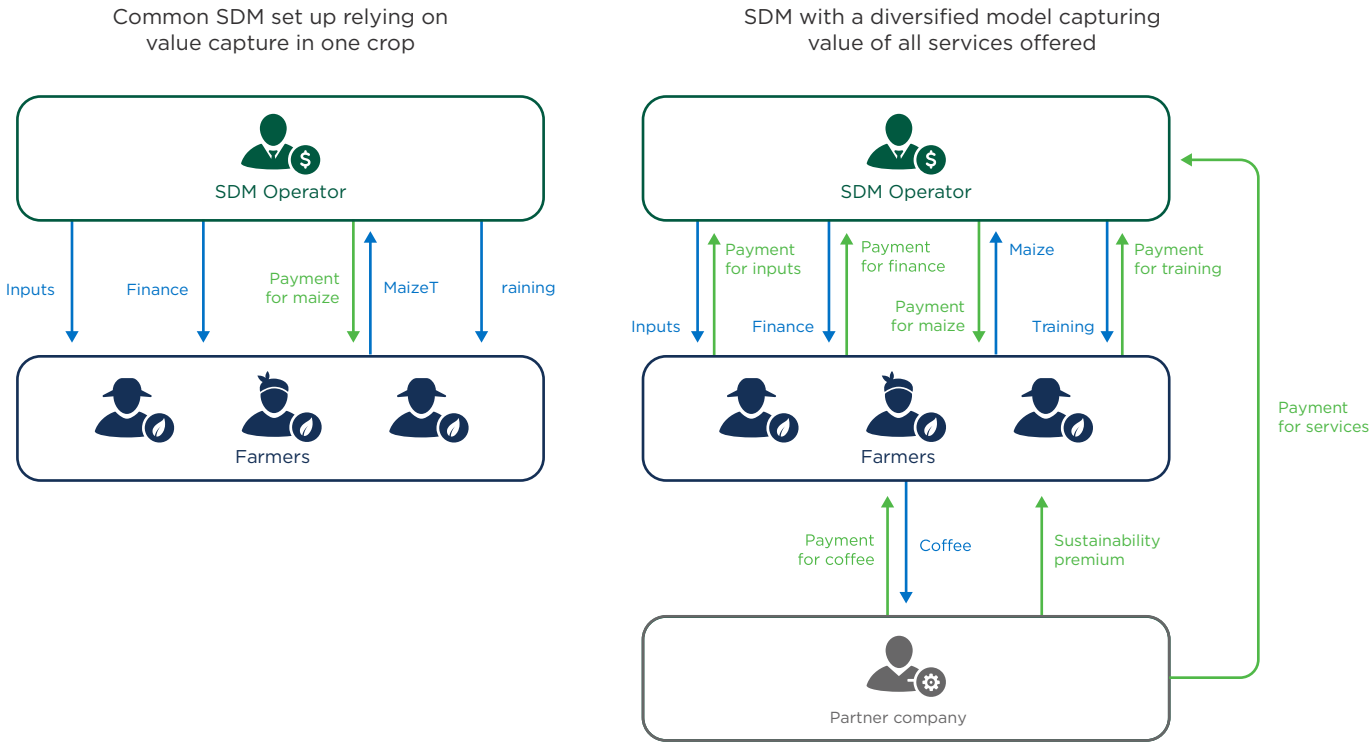
5.1.2 INCREASING SERVICE REVENUES AND VALUE CAPTURE

The least risky strategy for SDMs to reach financial sustainability is to cover costs through service payments. As stated at the beginning of this chapter, the majority of SDMs are far removed from generating sufficient service revenue to break even. Besides the often-limited ability of farmers to pay for services, a primary reason for low service revenues is many SDMs capture only a small share of the value generated at farm level. The typical sourcing-focused SDM offers a variety of services but only earns (uncertain) return through the increased productivity of the farmer in one crop. Figure 21 illustrates most SDMs only capture a small share of the value they create, indicating a substantial opportunity to generate higher revenues for services; either by charging the smallholder farmers directly or charging other stakeholders who indirectly benefit from the provided services.

FIGURE 21: OPPORTUNITY FOR INCREASED VALUE CAPTURE FOR MOST SDMS



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A model generating margins on virtually all services and products going to or coming from the farm is likely better positioned to achieve financial sustainability. In addition, charging for every individual service provides the SDM operator with some assurance of each service adding individual and direct value eliminating the risk of relying on uncertain returns at harvest time. For this to work, SDM operators need to have a solid understanding of the segments of farmers they serve and how they differ regarding levels of willingness and ability to pay for services. Payment and subsidy schemes should be tailored to segments and can evolve over time as farmers intensify and become more professional and are thus freer to cover a larger share of the service costs.

For example, an SDM analysis performed for ECLOF Kenya (highlighted in chapter 4) indicated services provided in the SDM resulted in significant benefits for the cooperatives (increasingly more reliable production by the cooperative members). Therefore, ECLOF Kenya renegotiated its relationship with dairy cooperatives as they were previously not paying for this benefit.

Different stakeholders often have different objectives and are able to capture different kinds of benefits. An SDM with a single operator might neither be able to achieve the maximum impact at farm level (since a single SDM operator might also provide services are outside of their core expertise) nor be able to capture all benefits that can result from an SDM. For instance, a sourcing-focused SDM operator can capture data on farmer clients, which can be valuable to a financial services provider serving those same farmers but for whom the cost of collecting this data would be prohibitive. Partnerships or platforms, which bring together multiple service providers within a single model, could allow for a specialization of service provision and be used to capture more benefits. Besides purely commercial benefits, this could also involve partnering with others for whom social, community or environmental benefits have a value and for which they would be willing to provide funding.

Ultimately, SDMs need to create enough value to be sustainable and ideally find a way of capturing or monetizing that value for different stakeholders (beyond the SDM operator and farmers) to justify the costs of service provision and increase the chances of attracting sustainable sources of funding.

As mentioned in the beginning of this chapter, investors are increasingly looking for social and environmental returns in addition to financial returns. For SDMs, this presents an opportunity to specifically target investors by highlighting sustainability outcomes of the SDM, such as improved women's market inclusion. Moving forward we will focus our analysis on understanding how different SDMs achieve different sustainability outcomes and how they increase and balance financial return and social impact.

5.1.3 IMPROVING FINANCIAL MANAGEMENT AND STRUCTURES

While this report focuses on the operational question of how to improve service delivery to smallholder farmers, another key opportunity for increasing the financial sustainability of SDMs lies in improving financial management and structuring the SDM operator's finances. By exploring different funding opportunities more strategically, companies can increase their access to and lower the cost of capital. It is important to indicate the funding structure (rate, loan term, collateral requirements, repayment structures, etc.) matches the financing needs of the SDM as well as the realities of the agricultural cash flow. The following innovation illustrates this point by showing the potential gains Tulaa could achieve by restructuring its capital.

INNOVATION

Restructuring capital

SDM OPERATOR:
Tulaa

SDM TYPE:
Service-Focused, Financial Service Provider

COUNTRY:
Kenya

COMMODITY:
Finance

Tulaa, a digital marketplace connecting service providers and buyers to farmers, is required to estimate its lending activity in advance and in a foreign currency because it is borrowing fixed-term debt denominated in USD. This often results in Tulaa paying for credit capacity it does not need while exposing itself to exchange rate risk. If Tulaa could switch to a flexible line of credit, net income gains could increase by 10% a year. Going one step further, if half of this new credit line was denominated in Kenyan Shillings (KES) instead of USD at the prevailing commercial interest rate, Tulaa could increase annual net income by an additional 10%. Another option for Tulaa is to seek a concessional fixed-term debt denominated in USD, which could save up to 20% in financing costs per year. However, service providers like Tulaa cannot do this on their own. Funders have an important role to play in collaborating with service providers to map out their needs and design new forms of investment vehicles that can help optimize the capital structure of providers and drive meaningful change.

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5.2 THE ROLE OF DONOR FUNDING

Donor funding plays a key role in most of the SDMs we have analyzed to date. Only 30% of SDMs receive no donor funding at all and 35% donor funding covers more than 20% of the SDM's costs. Due to the challenging economics of SDMs we do not believe it is realistic for all SDMs to be financed without any donor funding. For example, SDMs that are primarily working with subsistence farmers or SDMs introducing new business models still in need of being proven are more likely to need donor funding for operational (start-up) support. However, we believe service efficiency and effectiveness gains can help to reduce and sometimes eliminate the dependency on donor funding over time. More specifically, donor funding can be strategically used within SDMs (e.g. to pilot innovative approaches, help in the initial design of an SDM or prove the business model of an SDM) and clear strategies for reducing (or eliminating) the donor funding ratio can be agreed from the start. In the meantime, we believe with the opportunities described in this report, SDMs can continue to become more effective and efficient. Higher effectiveness, through the creation of added value for farmers, can be translated into higher revenues received from service payments while improved efficiency can reduce the SDM costs per farmer. As a result, we believe SDMs have opportunities to become more investable and can, over time, become less reliant on donor funding.

Business models dependent on ongoing donor funding are not commercially investable. However, there is often a role for donor investment in the development of SDMs and for assessing and improving the impact and (financial) sustainability of these models. Donor support can catalyze innovation, especially in new models that companies might deem too risky to try with their own resources. It can also leverage the existing infrastructure of an SDM to generate impact (e.g. funding activities typically outside the scope of the business). There is also a role for (temporary) subsidized interest rates, leveraging capital to scale faster in environments where interest rates are disproportionally high.

Going beyond traditional donor funding, new innovative approaches to farmer finance are required through the building of public-private partnerships which mitigate risks, "crowd in" institutional investments and enable solutions on a meaningful scale.

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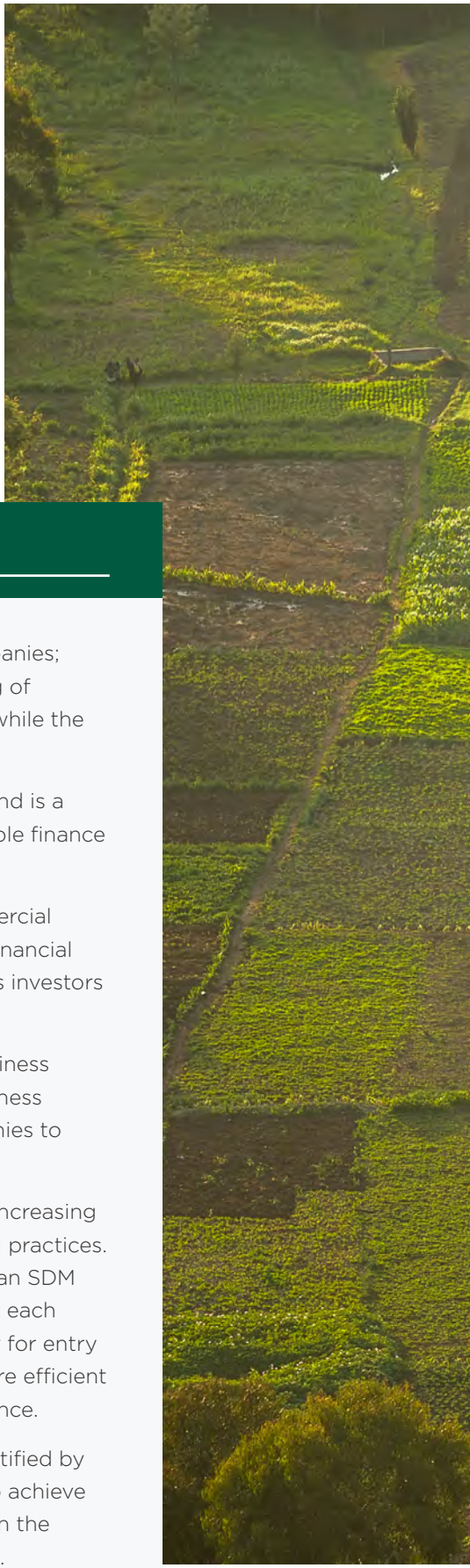
5.3 LOOKING FORWARD – ATTRACTING INVESTMENT WITH THE HELP OF FARMFIT

Farmfit advises and supports companies in improving the efficiency, effectiveness and financial sustainability of their service provision to smallholders. Our analysis, advice and technical assistance is geared towards achieving commercial viability and securing investment for scale – independent of donor funding. To that end, Farmfit matches partner companies with suitable investors such as the newly launched IDH Farmfit Fund (see box below).



IDH FARMFIT FUND

Access to finance is a critical element which remains elusive to many companies; be it a company that has already achieved bankability through the backing of interventions and advisory work of the Farmfit Business Support team or while the company is implementing the remedial interventions to become bankable.

The Farmfit Fund has been designed to overcome this gap. The Farmfit Fund is a catalytic de-risking fund designed to increase access to long-term affordable finance for smallholder farmer focused SMEs, banks and supply chain companies.

Recognizing the perception of high risk and costs are crowding out commercial finance from this sector, the Fund has been equipped with the necessary financial instruments to both de-risk investments in this sector and reduce the costs investors face when wanting to enter this sector.

In both these respects, the Farmfit Fund will work closely with Farmfit Business Support to not only ensure investee companies are robust and have a business model sustainable in the true sense, but also to work with investee companies to reduce costs when it comes to investing in their supply chains.

The Fund aims to improve the livelihoods of at least three million farmers, increasing their incomes by at least 50% while also promoting sustainable agricultural practices. IDH Farmfit ensures technical assistance (led by the insights derived from an SDM analysis) works hand in hand with financing so both can mutually reinforce each other, leading to better results for the farmer. Similarly, lowering the barrier for entry of financial institutions by offering large-scale risk mitigation with new, more efficient distribution (e.g. fintech) will boost investment volumes in smallholder finance.

The Farmfit Fund, as a financial partner for the sustainable companies identified by the SDM analysis, adds the necessary element to allow these companies to achieve both scale and impact on the livelihoods of farmers by providing more than the standard risk sharing guarantees that have become common in the market.

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6.0

Impact at scale

INTRODUCTION

Ultimately, Farmfit's vision is a competitive marketplace where companies are providing smallholder farmers with a choice of accessible, affordable and high-quality services to improve their businesses and livelihoods. In this report we have shown that SDMs are already having a positive impact on smallholder livelihoods and we have shared several strategies for how SDMs can further broaden and deepen their impact. We have also shown (from the companies' perspective) the viability of these SDMs is generally much less clear – their efficiency and financial sustainability need to be improved to become commercially viable.

To realize our vision, however, we need to ensure models are not only commercially viable and impactful but also scalable; the greater the number and scale of strategically designed and implemented SDMs, the more smallholder farmers benefit from access to services, more profitable businesses and ultimately improved livelihoods.

This concluding chapter explores our initial insights into the scaling potential of different models and how we aim to accelerate their scaling.

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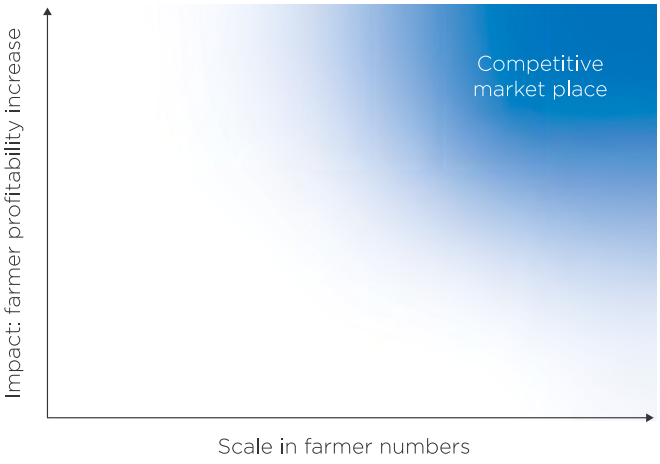
6.1 INSIGHTS ON IMPACT AT SCALE

We envision a competitive marketplace to be effective as it combines scale (i.e., many farmers have access to services; services are affordable as companies can benefit from economies of scale) with value offered to farmers (i.e., services are of good quality and tailored to farmer needs). This is illustrated in Figure 22.

FIGURE 22: THE FARMFIT VISION FOR THE OPTIMAL SMALLHOLDER ENGAGEMENT ECOSYSTEM



Currently, a well-functioning market for smallholders is non-existent. Investing in service provision is costly because of the underlying economics of smallholder farming, the high (perceived) risks to invest and a weak enabling environment. As a result: 1) most SDMs cannot make a profit from services alone, relying on donor funding and/or recouping service costs through improved sourcing margins and 2) most farmers have no access to services or where services do exist, farmers have little choice.

It should be clear that no single SDM can create a competitive marketplace; a large and diverse set of SDMs with different and complementary value propositions is needed. Based on our growing dataset we have observed potential pathways for SDMs to evolve and/or partner towards creating a mature marketplace for smallholder services. We see the two main categories of SDMs – service-focused and sourcing-focused – playing different roles on the scale-value addition spectrum (see Figure 23).

- Service-focused SDMs often have a relatively targeted scope of services provided centered around a set of core competencies but can scale to large numbers of farmers as they are not limited to one specific value chain. This scale is often driven by technology as well as the inherent incentive for service providers to increase their number of customers and sales.
- By contrast, sourcing-focused SDMs tend to create a higher farm-level impact but on a smaller scale. A small number of supply-focused SDMs we have worked with, whose operators are large off-takers, offer a holistic services package to farmers and appear to achieve high impact at farm level (up to 180% profitability increases) and have reached high numbers of farmers (individually up to 90,000 farmers). Nonetheless, such models are rare, and their scale is limited by the number of farmers in the SDM operators' supply chain and the demand for the crop(s) in question.

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To achieve both scale and impact for farmers, we need to combine the impact potential and market-led approach of sourcing-focused SDMs with the potential and drive to scale of service-focused models. While our dataset is still relatively small, especially for service-focused models, we have observed some models, utilizing partnerships to leverage different strengths, are demonstrating the ability to provide the impact and scale needed to transform farming from subsistence to profitability for farmers within their SDM. These SDMs are what we define as platform and partnership models, both of which have the potential of combining the benefits of both impact and scale (see Figure 24).

FIGURE 24: PARTNERSHIPS AND PLATFORMS AS MODELS FOR IMPACT AT SCALE AND A STEP TOWARDS A COMPETITIVE MARKETPLACE

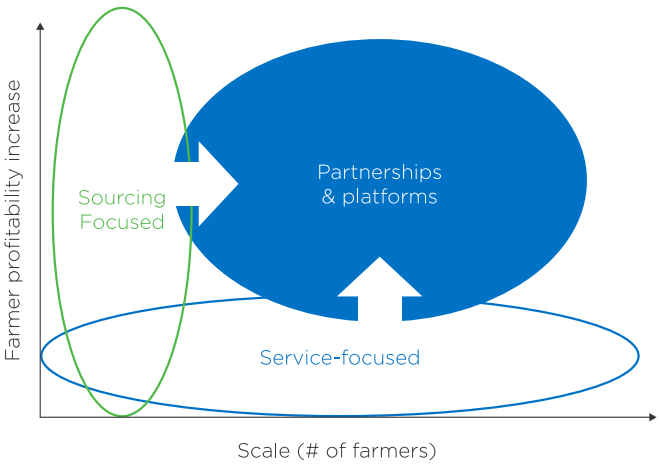
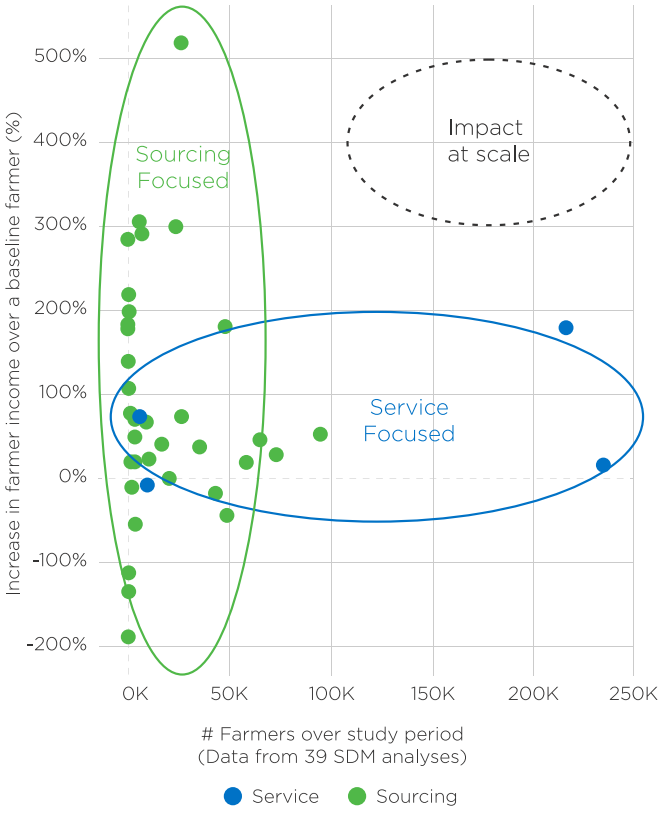


FIGURE 23: RELATING SCALE TO IMPACT FOR INDIVIDUAL SDM MODELS IN OUR DATASET



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Platform and partnership models combine many of the benefits of a single SDM providing holistic services with those of a market-driven approach. By bringing together a variety of service providers, each service provider can focus on their core strengths while leveraging shared overhead and infrastructure-reducing costs while offering a complete set of services.

The breadth of providers allows not just costs to be shared among them, but also benefits. For instance, using existing payment systems between farmers and off-takers can reduce the risks and transaction costs for financial service providers to serve those same farmers. Another example is service providers partnering with brands and off-takers to improve market access, off-take or other sourcing-related activities having the opportunity to capture and share the source value created as a result of services provided.

While we believe platform and partnership models have the potential to offer benefits to farmers and service providers involved, we have also observed more work is often needed to quantify the value proposition of such partnership and platform models and to translate this into sustainable revenue streams for the shared infrastructure operators. The ownership of and control over the shared infrastructure within a partnership model or the costs of setting up and operating a platform often remain a challenge. As indicated previously and highlighted by several partners, identifying the right partners and maintaining a productive partnership are additional challenges.

Notably, a single partnership or platform does not yet equate a functioning, competitive marketplace providing smallholders with a choice of affordable services. To create competition on price and quality between service providers and provide farmers with choices, multiple SDMs need to exist in the same region. Nevertheless, we see platforms and partnerships as a promising intermediary state where no such marketplace exists.

6.2 OUR NEXT STEPS TO ACCELERATE THE SCALING OF SERVICE DELIVERY

In the upcoming years, Farmfit will increasingly emphasize analyzing and supporting SDM platforms and partnerships with the potential to deliver impact at scale. The creation of partnerships between different service providers to better organize entire supply chains and sectors, whether through platforms or directly between players, will be a particular focus. As such, we are fostering key partnerships, including those between input providers, off-takers and FSPs. We observe a trend of new, often technology-based players entering the service provision market, ranging from mobile network operators providing platforms to small start-ups focusing on satellite-based crop insurance. We will continue to analyze these innovative models to better understand how they can deliver and monetize value to smallholders as well as their partnering off-takers and how to structure these models to realize their scale potential.

We observe these new players, as well as more traditional SDMs, are increasingly seeing data as a strategic business asset driven by demand for traceability and increasing competition by sourcing-focused companies to secure the loyalty of their smallholder farmer clients. Similarly, accurate data and relationships with smallholders are increasingly seen as a strategic advantage by service providers and consumer goods companies, realizing these smallholders are likely to become a sizeable customer base in the future. On the one hand we expect this will lead to increased and more accurate data on farm-level impact, which would greatly facilitate the generation of insights into the success factors of SDMs; on the other hand, we are seeing the increasing commercialization of smallholder data makes companies reluctant to share data and lessons.

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To finance these data-driven SDMs, we notice a growth of promising collaborations between the public and private sectors, including models such as the Farmfit Fund. While some traditional donor investments are expanding their focus to include more intractable problems, such as gender inclusion, we see impact investors becoming increasingly active in the space of service provision to smallholder farmers and agri-entrepreneurs aimed at productivity and profitability increases. However, investors are also placing increasing importance on issues, including gender and climate, presenting an opportunity for impact-focused SDMs to access funding.

While the focus of this report has been on the sustainability of SDMs from an economic perspective, we have recently extended the scope of our analyses to cover further sustainability dimensions at the farm level, especially gender equality, climate resilience and food security and nutrition. Our aim is to provide insights into the business case for companies to provide services making impact go beyond productivity and profitability increases.

As discussed throughout this report, we recognize the positive impact of a strategic SDM approach to improving the sustainability of export supply chains and the livelihoods of smallholder farmers who operate within them. However, most smallholder farmers in sub-Saharan Africa are active in locally and regionally traded food-crops, producing up to 80% of the regional food supply (Food and Agriculture Organization (FAO), 2008)). To reach these smallholder farmers and to refine insights on the design and performance of SDMs in these supply chains, Farmfit will increasingly focus on analyzing and supporting SDMs in regional food supply chains. As discussed in chapter 2, we see several differences between SDMs in export and local/regional supply chains and we believe there is a significant unmet opportunity for sharing lessons learned between these two sectors. To reach scale in the fragmented market of regional food supply chains, Farmfit will not only work with innovative platform models as described above, but focus on forming partnerships with major off-takers to jointly structure their supply chain.

Clearly, Farmfit alone cannot achieve its vision of creating a competitive marketplace serving smallholder farmers which provides equal access for women and men and protects farmers from food insecurity and the negative effects of climate change. What is required is a partnership of agri-businesses, service providers, investors, development actors and governments. Even with such a coalition, we cannot be sure we can attain our vision. What we can be sure of, however, is that through the sharing of best practices, data-driven insights, innovative ideas and financial risks, we can make a meaningful impact on the lives of millions of smallholders. We are committed to further developing this approach to make service provision to smallholder farmers commercially viable and to create impact at scale – we hope you will join us.

7.0

Annexes

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CASE PROFILES

The case profiles highlighted here represent the analyses, innovations and interviews that have informed the analyses in this report.

Case	Country	Main crop	Business Model	Service package	Number of farmers (at time of engagement)	Year of analysis completed	Period and years of analysis
Allied Atlantic	Nigeria	**Cassava**	Sourcing	Training/ Inputs	**1,000**	2017	**2017-2022 (5)**
Anatrans	Burkina Faso	**Cashew**	Sourcing	Holistic	**4,000**	2017	**2016-2021 (5)**
Babban Gona	Nigeria	**Maize**	Service	Holistic	**18,000**	2017	**2013-2021 (8)**
Barry Callebaut	Ivory Coast	**Cocoa**	Sourcing	Training/ Inputs	**4,000**	2016	**2016-2021 (5)**
BC Prova	Madagascar	**Vanilla**	Sourcing	Training/ Inputs	**2,000**	2017	**2017-2021 (4)**
Cafe California	Mexico	**Coffee**	Sourcing	Training/ Inputs & Finance	**6,000**	2018	**2014-2022 (8)**
Cargill	Ivory Coast	**Cocoa**	Sourcing	Training/ Inputs	**73,000**	2016	**2009-2016 (7)**
Crest Agro	Nigeria	**Cassava**	Sourcing	Holistic	**2,000**	2018	**2018-2022 (4)**
ECOM	Vietnam	**Coffee**	Sourcing	Training/ Inputs	**2,000**	2015	**2013-2015 (2)**
ECOM	Tanzania	**Coffee**	Sourcing	Holistic	**17,000**	2015	**2012-2015 (3)**
ECOM	Ghana	**Cocoa**	Sourcing	Training/ Inputs	**43,000**	2016	**2013-2017 (4)**

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Case	Country	Main crop	Business Model	Service package	Number of farmers (at time of engagement)	Year of analysis completed	Period and years of analysis
ECOM/SMS	Vietnam	**Coffee**	Service	Training/ Inputs	**5,000**	2018	**2018-2025 (7)**
Farm to Market Alliance	Tanzania	**Maize**	Service	Training/ Inputs & Finance	**38,000**	2018	**2016-2023 (7)**
GADC	Uganda	**Cotton**	Sourcing	Training/ Inputs & Finance	**48,000**	2017	**2015-2022 (7)**
Iberoke	Kenya	**Coffee**	Sourcing	Training/ Inputs & Finance	**5,000**	2018	**2013-2022 (9)**
ITC	India	**Chili**	Sourcing	Holistic	**5,000**	2016	**2012-2022 (10)**
Mars	Indonesia	**Cocoa**	Sourcing	Training/ Inputs	**2,000**	2015	**2013-2023 (10)**
Natures Pride	Guatemala	**Mange tout**	Sourcing	Training/ Inputs	**1,000**	2018	**2015-2025 (10)**
Olam	Cameroon	**Coffee**	Sourcing	Holistic	**4,000**	2016	**2009-2016 (7)**
Olam Cashew	Ivory Coast	**Cashew**	Sourcing	Holistic	**14,000**	2017	**2016-2022 (6)**
One Acre Fund	Kenya	**Maize**	Service	Holistic	**234,000**	2017	**2015-2017 (2)**
Plexus	Mozambique	**Cotton**	Sourcing	Holistic	**52,000**	2017	**2016-2020 (4)**
Pratibha Syntex	India	**Cotton**	Sourcing	Holistic	**28,000**	2017	**2014-2022 (8)**

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Case		Country	Main crop	Business Model	Service package	Number of farmers (at time of engagement)	Year of analysis completed	Period and years of analysis
Psaltry	**Psaltry International**	Nigeria	**Cassava**	Sourcing	Holistic	**1,000**	2018	**2016-2021 (5)**
rootcapital	**Root Capital**	Guatemala	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2016-2016 (0)**
rootcapital	**Root Capital**	Kenya	**Sorghum**	Sourcing	Holistic	**8,000**	2017	**2013-2014 (1)**
rootcapital	**Root Capital**	Mexico	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2014-2016 (2)**
rootcapital	**Root Capital**	Peru	**Coffee**	Sourcing	Holistic	**3,000**	2017	**2015-2017 (2)**
rootcapital	**Root Capital**	Guatemala	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2016-2016 (0)**
rootcapital	**Root Capital**	Mexico	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2015-2016 (1)**
rootcapital	**Root Capital**	Mexico	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2015-2016 (1)**
rootcapital	**Root Capital**	Kenya	**Sorghum**	Sourcing	Holistic	**8,000**	2017	**2016-2017 (1)**
rootcapital	**Root Capital**	Peru	**Coffee**	Sourcing	Holistic	**1,000**	2017	**2014-2016 (2)**
rootcapital	**Root Capital**	Peru	**Coffee**	Sourcing	Holistic	**4,000**	2017	**2014-2014 (0)**
SANGANY	**Sangany**	Madagascar	**Coffee**	Sourcing	Holistic	**3,000**	2017	**2015-2021 (6)**
	Simexco	Vietnam	**Coffee**	Sourcing	Training/ Inputs & Finance	**3,000**	2018	**2019-2021 (2)**

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Case	Country	Main crop	Business Model	Service package	Number of farmers (at time of engagement)	Year of analysis completed	Period and years of analysis
Technoserve	Ethiopia	**Coffee**	Service	Training/ Inputs	**10,000**	2016	**2011-2015 (4)**
Tembo	Tanzania	**Coffee**	Sourcing	Training/ Inputs & Finance	**2,000**	2016	**2012-2020 (8)**
Thai Farm International	Nigeria	**Cassava**	Sourcing	Training/ Inputs & Finance	**1,000**	2018	**2017-2023 (6)**
Touton	Ghana	**Cocoa**	Sourcing	Holistic	**14,000**	2017	**2015-2025 (10)**
Ugacof	Uganda	**Multicrop (Maize, bean grains, bean seeds, coffee)**	Sourcing	Holistic	**2,000**	2017	**2018-2024 (6)**
Unilever Tea	Tanzania	**Tea**	Sourcing	Training/ Inputs	**1,520**	2018	**2019-2021 (2)**
Wood Foundation	Rwanda	**Tea**	Sourcing	Training/ Inputs & Finance	**10,000**	2018	**2012-2020 (8)**

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IDH is grateful for the trust, engagement and partnership of more than 50+ service provider partners, many of whom are highlighted in this report, working to innovate on their service delivery to smallholders across a broad range of commodities, countries, and characteristics.

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ACRONYMS

AADL	Allied Atlantic Distilleries Limited
AATF	African Agriculture Technology Foundation
AGRA	Alliance for a Green Revolution in Africa
BMGF	Bill & Melinda Gates Foundation
CGAP	Consultative Group to Assist the Poor
CSA	Climate smart agriculture
CSR	Corporate and social responsibility
DFID	United Kingdom Department of International Development
EBA	Enabling the Business of Agriculture
ECC	Exportadora Café California
FAO	Food and Agriculture Organization
FSP	Financial service provider
GAP	Good agricultural practices
IDH	Initiatief Duurzame Handel
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
ISF	Institute for Smallholder Finance
KES	Kenyan Shilling
M&E	Monitoring and evaluation
MNO	Mobile network operator
MT	Metric ton
P&L	Profit and loss
PO	Producer organization
RAF-LL	Rural and Agricultural Finance Learning Lab
SDM	Service Delivery Models
SME	Small and medium enterprise
SMS	Sustainable Management Services
UNICEF	United Nations International Children's Emergency Fund
USD	United States Dollar
USSL	Union Service Stores Limited
UTT	Unilever Tea Tanzania
WFP	World Food Programme
WHO	World Health Organization

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