



INCLUSIVE GROWTH

MAKING VALUE CHAINS
WORK FOR SMALLHOLDER
FARMERS





ISLAMIC DEVELOPMENT BANK
AGRICULTURE INFRASTRUCTURE DIVISION
ECONOMIC AND SOCIAL INFRASTRUCTURE DEPARTMENT

2020

IsDB

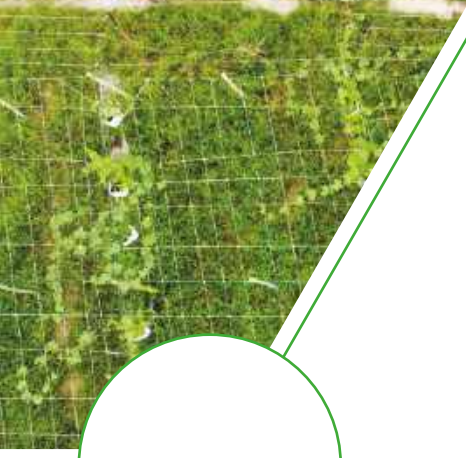


البنك الإسلامي للتنمية
Islamic Development Bank

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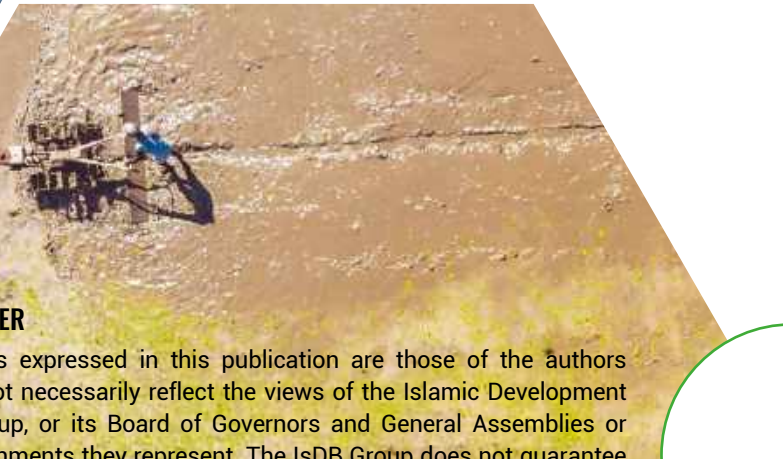
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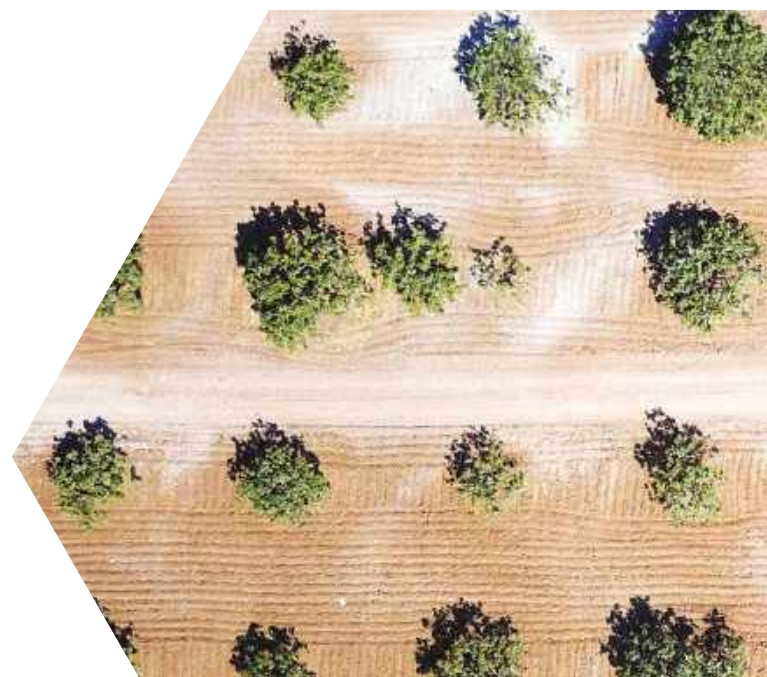
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FOREWORD

The agriculture and rural development (ARD) sector plays a significant role in the economies of most developing countries. Indeed, a resilient and sustainable agriculture sector is key to development, given that the majority of the population in many of these countries are smallholder farmers. This is certainly the case among the 57 member countries (MCs) of the Islamic Development Bank (IsDB). Agricultural growth is an important driver of overall economic development, but it's crucial to trigger inclusive and sustainable growth. IsDB MCs need growth that provides decent jobs for women and youth, and delivers a triple bottom line of economic, social and environmental benefits.

Governments and their development partners are deploying various programs to address these challenges. Increasingly, the Global Value Chains (GVCs) approach is being recognized for its potential to unlock growth through participation in local, regional and global markets. The question for governments and the development community in general is how to improve the efficacy of GVCs in drawing smallholders inclusively into a productive ARD sector.

This book – *Inclusive Growth: Making Value Chains Work for Smallholder Farmers* – aims to provide insights into this question and practical solutions for increasing the engagement of smallholders in profitable GVCs. The overall theme and the eight chapters of the book reflect the Islamic Development Bank's 10-Year Strategy and its execution mechanism – the President's Five-Year Program (P5P). 'Making Markets Work for Development' is a central theme of that program. It also fits with the Sustainable Development Goals and the commitment made by countries around the world to achieve them by 2030. GVCs have great potential to help with this, but harnessing that potential is not an easy task. It requires strong partnership with many actors, particularly the private sector, with each of them fulfilling their commitment.

This book is the second in a series of IsDB publications that are in line with the Bank's goal of being knowledge-driven in its investments and efforts to catalyze impactful and sustainable development. The first book – *Change for Impact*, published in 2018 – made an important contribution to this goal. I am confident this current book will do the same. The information contained in this book responds to ever-increasing demand for insights into the best approaches to developing and executing private sector-led GVCs that integrate smallholders. Through a set of well-sequenced chapters and case studies, it offers practical recommendations to inform the future development of strong GVCs at scale.



It is particularly encouraging that the book covers opportunities for de-risking GVCs, including a focus on the risks associated with climate change, as these represent a major threat to many of our MCs. Valuable insights are also provided on measures to improve access to Islamic financing, including private sector sources, as part of developing inclusive GVCs. Useful lessons on the policy and institutional support needed to grow sustainable and inclusive GVCs are offered too. Our collective challenge now is to deploy this knowledge effectively in our development programs.

The IsDB is indebted to all the authors of this book and the institutions that contributed to its production. The case studies and knowledge you assembled from both MCs of IsDB and others are very informative. Your efforts will, no doubt, provide valuable input in growing sustainable GVCs in developing countries in general, and more specifically, the MCs of the IsDB.

A handwritten signature in black ink, enclosed in a simple oval border. The signature is in Arabic script and appears to read 'بندر هجر'.

Dr. Bandar M. H. Hajjar
President, Islamic Development Bank

PREFACE



It has been two years since IsDB's new business model of *'Making Markets Work for Development'* was launched by the Bank's President, H.E. Dr. Bandar M. H. Hajjar. Over the past two years, the Bank has conducted a series of consultations with member countries and development partners to consolidate and mainstream the concept of GVCs into its operations. This book – *Inclusive Growth: Making Value Chains Work for Smallholder Farmers* – aims to contribute to that effort.

The book is the second of its kind produced by the Bank over the past two years. The first book – *Change for Impact: Transforming Agriculture and Rural Development in IsDB Member Countries* – provided valuable lessons on agricultural transformation to inform the way forward. This book draws on practical examples in making the case for inclusive value chains (VCs) as an important tool for rural economic growth and poverty alleviation.

The book is meant to give the reader a holistic appreciation of the importance of VCs in achieving inclusive growth in this globalized world. To this end, it provides case studies and insights that can help practitioners and the development community in general.

The book is organized into eight interrelated chapters. Chapter 1 provides a conceptual framework and discusses the book's theory of change which is "sustainable and inclusive smallholder-friendly VCs (local, regional and global) are best developed through public-private partnerships that improve access to innovations and raise productivity and access to finance, buffer farmers and agribusinesses from risks, and develop strong institutions and policies that encourage private sector engagement".

Chapters 2, 3 and 4 offer an overview of technical and institutional challenges and opportunities for commercializing smallholder production of food crops and livestock systems. Interventions for increasing yields and labor productivity (output per agricultural worker) are brought to the fore. Even where yields are improving, value addition remains limited. Chapter 5 examines approaches to mitigating risks to VCs, particularly climate change and market volatility. A chapter on financing the VC follows and explores the extent to which Islamic microfinancing can be utilized to overcome the funding constraints along the VC for farmers and small and medium enterprises (SMEs) in rural areas that are underserved by commercial financial institutions. Chapter 7 explores opportunities for addressing institutional capacity, including enabling policy environments, for the development and deployment of sustainable VCs at scale. The final chapter provides some key conclusions and forward-looking recommendations.

We hope that this book, which many development partners contributed to, will be a valuable resource and will support the efforts of IsDB and others in *'Making Markets Work for Development'*.

A handwritten signature in black ink, reading "Dr. Mansur Muhtar". The signature is fluid and cursive, with a prominent initial 'D'.

Dr. Mansur Muhtar

Vice President
Country Programs Complex
Islamic Development Bank

ACRONYMS

3ADI+	Accelerator for Agriculture and Agroindustry Development and Innovation	MC	Member Country
ACP	Africa, Caribbean and Pacific Group of States	MENA	Middle East/North Africa
ACRE	Agriculture and Climate Risk Enterprise	NARS	National Agricultural Research Systems
AECF	African Enterprise Challenge Fund	NGO	Non-Governmental Organization
AEK	Ard el Kheir	NIRSAL	Nigeria Incentive-Based Risk Sharing System for Agricultural Lending
AfDB	African Development Bank	OIC	Organization of Islamic Cooperation
APC	Agricultural Production Contract	OPEC	Organization of Petroleum Exporting Countries
ARC	African Risk Capacity	P5P	President's 5-Year Program
ARD	Agriculture and Rural Development	PPP	Public-Private Partnership
ASAL	Arid and Semi-Arid Lands	RIEEP	Rural Income and Employment Enhancing Project
ASF	Animal Source Foods	SACCO	Savings and Credit Cooperative
ATC	Agricultural Transformation Center	SAGCOT	Southern Agricultural Growth Corridor of Tanzania
ATVET	Agricultural Technical and Vocational Education and Training	SDC	Swiss Agency for Development and Cooperation
AU	African Union	SDG	Sustainable Development Goals
BMFG	Bill and Melinda Gates Foundation	SDP	Smallholder Dairy Project
CAADP	Comprehensive Africa Agriculture Development Programme	SEZ	Special Economic Zone
CRG	Credit Risk Guarantee	SME	Small or Medium Enterprise
CTA	Technical Centre for Agricultural and Rural Cooperation	TIA	Takaful Insurance of Africa
DH	Delice Holding	USAID	United States Agency for International Development
DLT	Distributed Ledger Technology	VC	Value Chain
EATIH	East Africa Trade and Investment Hub	WDCS	Women Dairy Cooperative Society
FO	Farmer Organization	YES	Youth Employment Support
FOSCA	Farmer Organization Support Center in Africa	ZTM	Zitouna Tamkeen
GDP	Gross Domestic Product		
GVC	Global Value Chain		
IBLT	Index Based Livestock Takaful		
ICBA	International Center for Biosaline Agriculture		
IFAD	International Fund for Agricultural Development		
IFPRI	International Food Policy Research Institute		
ILRI	International Livestock Research Institute		
IP	Innovation Platform		
ISFM	Integrated Soil Fertility Management		
KDB	Kenya Dairy Board		
LDC	Least Developed Country		
LMIC	Low or Middle Income Country		
MA	Mutual Accountability		

ACKNOWLEDGEMENTS

This book – *Inclusive Growth: Making Value Chains Work for Smallholder Farmers* – received support from many people and institutions, all of whom we would like to acknowledge.

First and foremost are the authors of the various chapters and case studies, most of whom are from institutions external to the Islamic Development Bank. Your journey with us in this task is consistent with our renewed strategy of engaging with networks of individuals and institutions leading transformative development work with sustainable impacts. Knowledge generation is key to this ambition. We appreciate and value enormously the time and effort you spent on developing the chapters, and on reviewing and editing them. We are particularly grateful to you for setting aside valuable time to participate in a three-day writing workshop in Istanbul, Turkey in October 2019.

Second, our sincere thanks to the peer reviewers of the book. Externally, our thanks go to Dr. Asad S. Qureshi, Senior Scientist in Irrigation and Water Management at the International Center for Biosaline Agriculture (ICBA) in Dubai, U.A.E. Within IsDB, we are very indebted to the following staff: Dr. Areef Suleman, Director of the Economic Research and Institutional Learning Department (ERIL), and Dr. Ousamane Seck, Division Manager of the Economic Research and Statistics Division, (ERIL). We are very grateful for extensive reviews of the early drafts of the book. We are also grateful to other staff of this department (Abu Camara, Ali Rashed, and Abdinassir Nur) and to members of the Agriculture Infrastructure Division (AID), including Abuzar Asra who provided data and statistics for various chapters.

It would have been difficult to produce this landmark work without the commitment of Dr. Bashir Jama (Lead, Food Security Specialist) who led the team from inception to completion of the book. Noura Kaki provided much-needed technical and operational support.

This publication would not have been possible without the valuable support from leadership and management of IsDB. In this regard, special gratitude goes to Nur Abdi, Manager, Agriculture Infrastructure Division.

Finally, we thank the UK-based firm Blackwood for providing strong technical and editorial support as well as participating in the writing workshop.

We are very proud of your collective accomplishments in producing this outstanding book. We are confident it will make a significant contribution to the development of inclusive and sustainable smallholder-led agriculture value chains globally, and more specifically in IsDB member countries as we work towards achieving the SDGs by 2030.



Amadou Thierno Diallo

Acting Director General
Global Practices
Islamic Development Bank.

IN NUMBERS



THE GLOBAL COMMUNITY HAS COMMITTED ITSELF TO ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS (SDGs) BY

2030

THE AVERAGE CONTRIBUTION OF THE AGRICULTURE SECTOR TO GROSS DOMESTIC PRODUCT FOR ALL MCs IN 2015 EXCEEDED

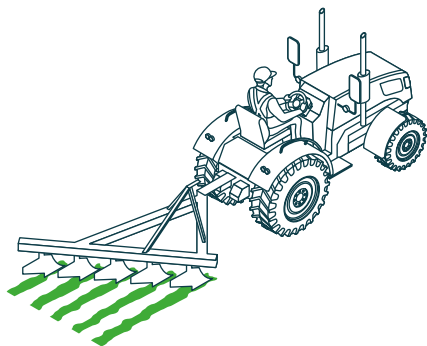
17.7%

OF AGRICULTURAL GROSS DOMESTIC PRODUCT (GDP) AND REACHED OVER

27.5%

AMONG 18 MCs CONSIDERED LOW INCOME AND FOOD DEFICIT COUNTRIES BY THE UNITED NATIONS.

Among the LIFDCs, 40-80% of the population are employed by the agricultural sector, and most are in rural areas where the incidence of poverty is highest.



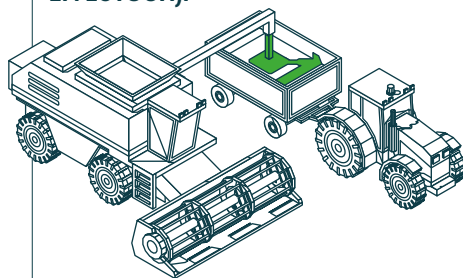
TOGETHER, MCs ACCOUNT FOR

29%

OF THE WORLD'S TOTAL AGRICULTURAL AREA AND

14-15%

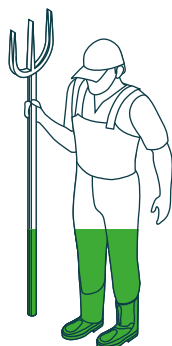
OF THE WORLD'S PRODUCTION (CEREAL, HORTICULTURE AND LIVESTOCK).



THEY ALSO EMPLOY OVER

37%

OF THE POPULATION OF THE OIC COUNTRIES THAT ISDB SERVES.



GLOBALLY, THE LIVESTOCK SECTOR ACCOUNTS FOR

40%

OF AGRICULTURAL GROSS DOMESTIC PRODUCT (GDP).

In individual low- and middle-income countries (LMICs), livestock makes a significant contribution to GDP and its importance is growing.

OF THE 750 MILLION POOR PEOPLE WHO DEPEND ON LIVESTOCK GLOBALLY,

TWO THIRDS

ARE WOMEN.

AS AT THE END OF 2019, ISDB HAS INVESTED OVER

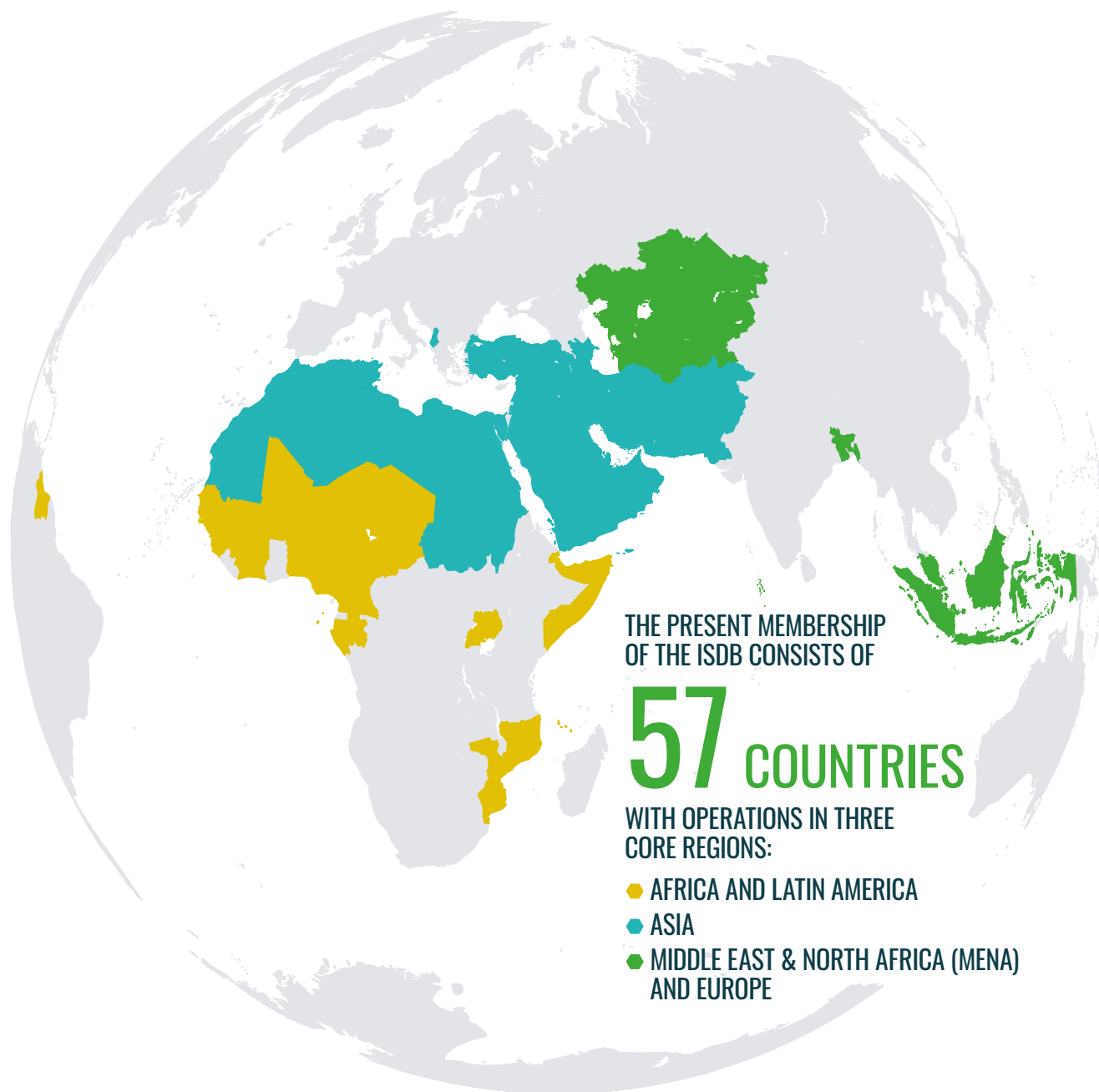
US\$ 16 BILLION

IN THE ARD SECTOR OF ITS MCs, REPRESENTING ABOUT

13%

OF OUR TOTAL INVESTMENTS IN VARIOUS DEVELOPMENT SECTORS.





ASIA

Bangladesh
Brunei
Indonesia
Kazakhstan
Kyrgyz Republic
Malaysia
Maldives
Tajikistan
Turkmenistan
Uzbekistan

AFRICA AND LATIN AMERICA

Benin
Burkina Faso
Cameroon
Chad
Comoros
Côte d'Ivoire
Djibouti
Gabon
Gambia
Guinea
Guinea-Bissau
Guyana
Mali
Mozambique
Niger
Nigeria
Senegal
Sierra Leone
Somalia
Suriname
Togo
Uganda

MIDDLE EAST & NORTH AFRICA (MENA) AND EUROPE

Afghanistan
Albania
Algeria
Azerbaijan
Bahrain
Egypt
Iran
Iraq
Jordan
Kuwait
Lebanon
Libya
Mauritania
Morocco
Oman
Pakistan
Palestine
Qatar
Saudi Arabia
Sudan
Syria
Tunisia
Turkey
U.A.E.
Yemen

CHAPTER 1

CHARTING A PATH TOWARDS INCLUSIVE AND SUSTAINABLE VALUE CHAINS

PRODUCTIVITY

Bashir Jama¹
and Sabri Er²

AGRICULTURE
AND RURAL
DEVELOPMENT



MARKETS

SDGs

KEY MESSAGES

- ◆ Achieving the Sustainable Development Goals (SDGs) by 2030, especially SDG1 (No Poverty) and SDG2 (Zero Hunger), requires a greater focus on developing inclusive agricultural commodity value chains (VCs). These VCs, whether local or global, have the potential to amplify the strong poverty-reducing potential of the agriculture and rural development (ARD) sector.
- ◆ The ARD sector is currently not performing well in many member countries (MCs), and this is largely due to under-investment, especially in measures that can raise productivity and improve access to markets for smallholders. Access to yield-improving inputs and to markets is particularly critical.
- ◆ Fortunately, IsDB has substantially increased its ARD investment, in partnership with various development partners, particularly since the 2008 food crisis. Over the past 44 years, close to US\$16 billion has been invested. Increased investment since 2008 is supporting the development of inclusive, sustainable and equitable VCs in our MCs. More effort is being put into developing GVCs and getting markets to work for the development of the ARD sector. This is an essential part of making progress towards the SDGs.
- ◆ Seizing the potential of GVCs and markets to engender inclusive growth that benefits smallholder farmers at scale requires strong public-private partnerships that collectively address constraints along the VCs.

¹ Bashir Jama, Lead Global Management, Food Security Specialist, IsDB

² Sabri Er, Agricultural Markets and Trade Specialist, IsDB

CHAPTER 1 CHARTING A PATH TOWARDS INCLUSIVE AND SUSTAINABLE VALUE CHAINS

INTRODUCTION

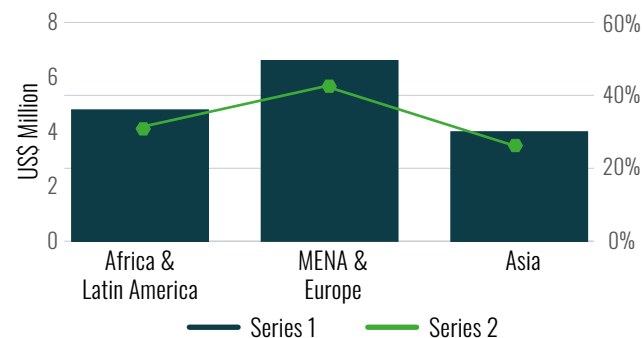
The global community has committed itself to achieving the Sustainable Development Goals (SDGs) by 2030. This is a significant challenge, particularly for developing countries, and it is one in which a globalized agriculture and rural development (ARD) sector must take center stage. There is, indeed, growing evidence (IFPRI, 2018) that increasing investments in agriculture, along with other complementary sectors, can contribute to broad economic growth and lift millions of poor people out of poverty. The evidence also highlights how trade and access to international markets are important not only for raising smallholders' incomes, but also their potential to feed a growing world population and provide more diverse food (IFPRI, 2018). Increasingly, globally integrated production systems and a revolution in food-tech solutions have transformed the way food is produced, distributed and consumed worldwide (FAO, 2019). These interconnected and technologically advanced markets have drawn many farmers into strong value chains (VCs). These VCs can be local, regional or global. But millions of smallholders have struggled to participate in well-organized VCs. The majority are subsistence farmers mainly in sub-Saharan Africa and South-East Asia, and they are predominantly in IsDB member countries (MCs).

The potential of VCs to unleash the comparative advantage of MCs in various agricultural commodities is enormous. The ARD sector is the main source of income for most of the rural poor in developing countries, and certainly many among the 57 IsDB MCs. It also plays a significant role in their economies as a whole. The average contribution of the sector to Gross Domestic Product (GDP) for all MCs in 2015, for instance, exceeded 17.7% and reached over 27.5% among 18 MCs considered Low Income and Food Deficit Countries (LIFDC) by the United Nations (SESRIC, 2016). Among the LIFDCs, 40-80% of the population are employed by the agricultural sector, and most are in rural areas where the incidence of poverty is highest.

Participation in VCs could lead to significant growth for these countries. At present, the sector is under-performing and this is largely due to under-investment. Agricultural productivity is low in most IsDB MCs, with estimated values standing at about 20-40% of the global average (SESRIC, 2016). It is critical to improve this, given that increases in agricultural productivity have a greater poverty-reducing effect than increases in industry or services (Ivanic and Martin, 2018).

The poverty-reducing benefits of a productive agriculture sector can in fact be as high as 40% among poor rural communities (De Janvry and Sadoulet, 2009). Additionally,

FIGURE 1 | IsDB'S INVESTMENTS IN THE ARD SECTOR RELATIVE TO OTHERS SINCE INCEPTION



Source: IsDB

THE AVERAGE CONTRIBUTION OF AGRICULTURE TO GROSS DOMESTIC PRODUCT (GDP) FOR ALL MCs IN 2015, EXCEEDED

17.7%

successful engagement with VCs can trigger higher levels of productivity and profitability (Hamid et al., 2019). The food and nutrition security benefits of a productive agriculture sector are also enormous. This is why 'Making Markets Work for Development' – the new business strategy for IsDB – aims to promote inclusive and sustainable VCs that improve the incomes of smallholders and create youth employment opportunities.

Achieving the SDGs by 2030 is, however, a tall order. Economic growth has to be accompanied by measures that enhance food security (SDG2) and build the resilience of production systems to climate change (SDG13). An additional complexity is the need to develop the sector in ways that are inclusive of smallholders. These farmers produce much of the developing world's food, yet they are generally much poorer than the rest of the population in their countries and are less food secure than even the urban poor. Participation in VCs has the potential to be a turning point for such farmers.

The good news, though, is that the 57 IsDB MCs collectively have significant potential to utilize the ARD sector to drive their economies and to do so in ways that are truly inclusive. Together, MCs account for 29% of the world's total agricultural area and 14-15% of the world's production (cereal, horticulture, and livestock). They also employ

over 37% of the population of the OIC countries that IsDB serves (SESRIC, 2016). Many, indeed, have a comparative advantage in the production and commercialization of important global food crops. This includes rice, for which several MCs in Africa have favorable agro-ecologies (Seck et al., 2010) even under smallholder production systems.

The potential of these countries could be harnessed more efficiently through the adoption of VCs, both local and global. At present, weak and fragmented VCs lead to smallholders reaping few rewards from farming (IsDB, 2018b). This generates negative feedback loops in which poor rewards from farming reduce the incentive to invest in innovations that could enhance productivity and market access. Consequently, many MCs are caught in a state of food insecurity, poverty and import traps. Where VCs exist, they are often territorial, without strong links to national, regional and global markets. The development of strong VCs could break that cycle and offer a pathway to greater prosperity for MCs.

1. ISDB'S CATALYTIC ROLE IN AGRICULTURE AND RURAL DEVELOPMENT

Since its inception in 1975, IsDB has made significant investments to support its MCs in developing productive and inclusive ARD sectors. These efforts have been amplified since the 2008 global food security crisis. As at the end of 2019, IsDB has invested over US\$ 16 billion in the ARD sector of its MCs, representing about 13% of our total investments in various development sectors. It is worth noting the tremendous increase in our investment in ARD since the 2008 world food crisis (see Figure 1).

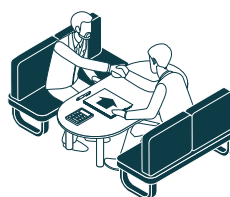
These investments have contributed in many ways to not only raising the productivity of the sector but also in making it resilient and sustainable. This is critical to achieving the SDGs, specifically SDG2 (Zero Hunger), by 2030. The bank's support to its MCs is guided by its foundation vision of improving wellbeing within and among the MCs and Muslim communities in non-member countries. That vision is encapsulated in a 10-Year Strategy with three focus areas: Inclusiveness (becoming a preferred partner for MCs' economic and social development); Connectivity (being a strong catalyst for South-South cooperation); and Islamic Finance Sector Development (being the leading reference in Islamic Finance). The President's 5-Year Program (P5P) provides operational and strategic thrusts that guide our implementation of this strategy.

A key feature of the P5P is the deployment of the VC approach as the modus operandi in all economic growth sectors, but particularly in ARD. The Bank's current ARD sector policy (IsDB, 2018a) embodies these principles and

puts VCs at the heart of its implementation strategy. This focus on VCs is also informed and encouraged by lessons from the Bank's investment in ARD over the past 45 years. These were highlighted in our seminal 2018 publication, *Change for Impact* (IsDB, 2018b). This book – *Inclusive Growth: Making Value Chains Work for Smallholder Farmers* – follows on from some of the key recommendations of that 2018 publication and attempts to provide more insights on key areas that are critical to developing VCs that are inclusive, sustainable and deliver widespread benefits.

2. DEFINING VALUE CHAINS

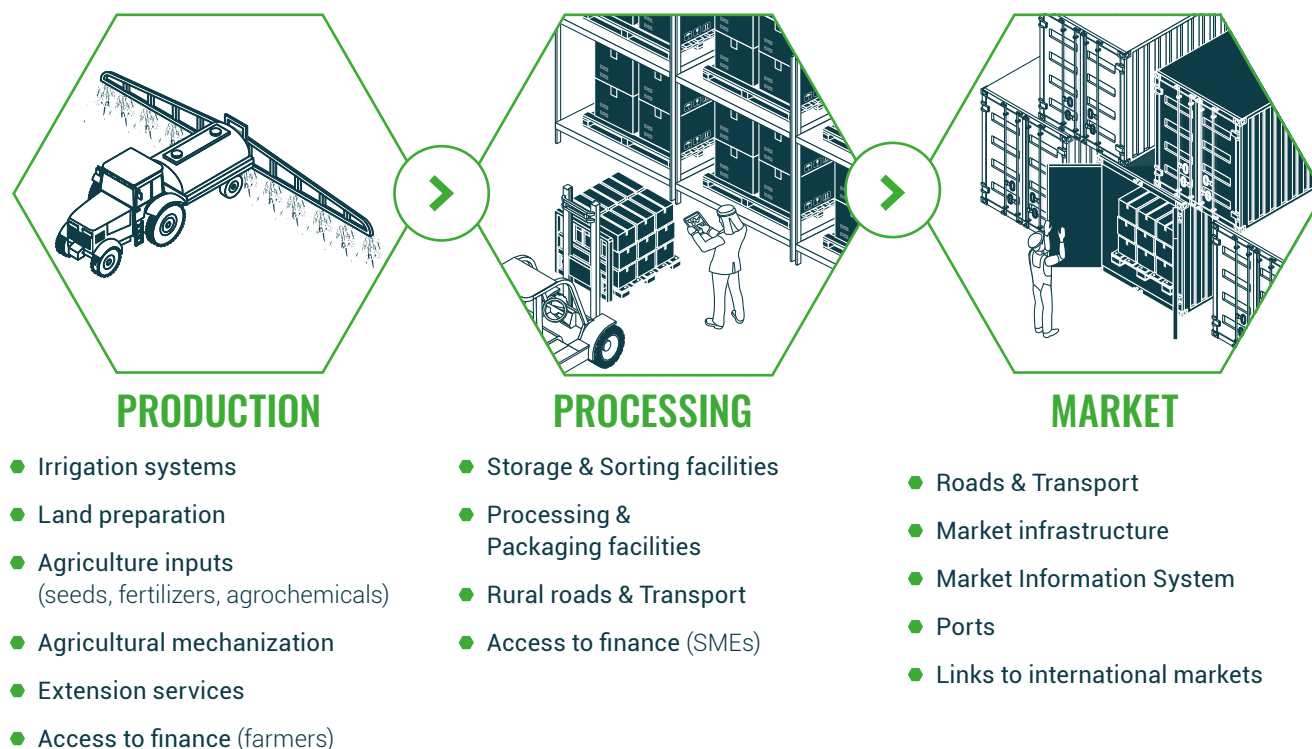
VCs can be defined in many ways, but broadly speaking, they are a set of linked activities that work to add value to a product, and they consist of actors and actions that improve a product while linking commodity producers to processors and markets. VCs are generally private sector-led and take on commodities that operate at local, regional and global levels. Global value chains (GVCs) are typically led by global firms and involve trade and value addition to the commodity across two or more countries. Forward and backward linkages are deployed to strengthen the VCs and to increase competitiveness, creating significant economic growth with the ability to reduce poverty. *Sustainable* food VCs have been defined as those that are profitable throughout, with broad-based benefits for society and without permanently depleting natural resources (Neven, 2014).



AS AT THE END OF 2019, ISDB
HAS INVESTED OVER US\$ 16 BILLION
IN THE ARD SECTOR OF ITS MCs

US\$ 16 BILLION

FIGURE 2 | AGRICULTURE VALUE CHAIN FRAMEWORK



Functional VCs bring on board three key principles (Neven, 2014). The first is a recognition that VCs are dynamic, market-driven systems in which vertical coordination (governance) is the central dimension. The second is a broad application, typically covering a country's entire product subsector. The third is that value addition and sustainability are explicit, multidimensional performance measures, assessed at the aggregated level.

These principles are widely used in IsDB's agricultural sector programming, in ways that also take into account the enabling policy environment necessary for VCs to be sustainable. This includes, as shown in Figure 2, forging strong public-private partnerships that address some key constraints. These include the supply of improved seeds, increasing the reach of extension and advisory services through the application of ICT-based technologies and provision of rural roads, linking to markets, and strengthening the capacity of national institutions to facilitate the operation of VCs.

It is worth noting in Figure 2 the importance of the post-harvest value-addition interventions between production and marketing. An absence of such interventions is the main reason that smallholders derive limited value from their hard-earned produce. Access to micro-finance would, for instance, allow farmers to access working capital to

defer sales of their produce right after harvest when prices are low, to a later point when they improve. It would also allow farmers, through their associations and/or private sector participation, to store, process and sell their produce in bulk, giving them the advantage of economies of scale.

3. TAKING VALUE CHAINS TO SCALE

Given the above, several important questions arise with respect to smallholder-friendly VCs. First, to what extent can VCs realize their potential to sustainably improve the productivity of smallholders, improve incomes and reduce poverty? Second, how do we scale up the positive impacts of VC development? Third, how can the momentum of those impacts be sustained over a long period of time? And finally, how do we find lasting solutions to the technical, institutional and policy constraints that limit the potential of VCs?

Achieving scale is critical given the extent of rural poverty and the untapped potential of agricultural VCs. Simply defined, scaling up means expanding, adapting and sustaining successful policies, programs and projects in different places and over time to reach a greater number of people (Hartmann and Linn, 2008). Scaling up is, however, challenging and requires a structured approach to developing and assessing best-bet methods (USAID,

2014). It takes time and adaptability, and may require much longer time horizons than most development projects typically allow. Scaling up is a multi-stakeholder process, and achieving multi-stakeholder buy-in from the beginning is therefore crucial. This buy-in should include the private sector, public sector and civil society.

It's fairly well known what it takes to achieve the benefits of scale in VCs. It includes, for example, increasing access in an inclusive manner to innovations that enhance productivity. It also includes reducing high levels of post-harvest losses, increasing access to markets, and creating incentives for sustained private sector engagement. The literature is replete with case studies on this front. They are, however, small in their scope, scale and sustainability. Fortunately, the research and development community are increasingly focusing on scale, given its importance in achieving global food security and inclusive growth (Hartmann et al., 2013; Frake and Messina, 2018).

Achieving scale in IsDBMCs calls for a deeper understanding of the farming and food systems that drive a particular VC. If we address this from a farming systems perspective, we can contextualize the production base and its biophysical potential to sustain a VC. This gives us the necessary insights into the type and level of investment required to set up competitive production systems. Commercialization of the produce is the next step, taking outputs through the complex web of food VCs and making them available to markets, particularly international ones. Taking a food systems approach also allows us to consider that several VCs can be developed from a given commodity, thus enhancing opportunities for more diversified engagement of agribusiness communities. This presents opportunities for expanding the scope of inclusive growth.

“Scaling up means expanding, adapting and sustaining successful policies, programs and projects in different places and over time to reach a greater number of people.”

(Hartmann and Linn, 2008).



Smallholders are important partners in IsDB's investments

4. WHY THIS BOOK?

The basic principle of *Inclusive Growth* is that inclusive, scalable and sustainable agricultural VCs are those that take a food and farming systems approach, meaning that they consider the position of every actor in the context of the entire system and seek to make their participation not just viable but economically and socially transformative. With that in mind, our aim is to dive deep and contextualize the specific challenges and opportunities for developing impactful VCs. The focus is on VCs associated with staple and non-staple food crops, including livestock and fisheries. These are all areas in which our MCs have the potential to develop competitive VCs at national, regional and global levels. The book has been authored by practitioners from both IsDB and international partner institutions with expertise in specific aspects of VC development.

We want to build on the successes in VC development that have already been made through previous investment in ARD, so we can foster robust and sustainable VCs that embody the triple bottom-line approach to sustainability in which we strive for economic, social and environmental benefits. Policymakers and development practitioners are already increasingly focusing on this, and guiding principles for inclusive and sustainable food VCs are emerging (Neven, 2014). This includes measures to monitor progress and to understand and improve the performance of VCs in order to attain impact at scale.

Inclusive Growth aims to support this by providing insights into how to unleash the power of value creation for smallholders, and the wider benefits that can follow from doing so in an inclusive and sustainable way. The issue of scale runs throughout the book. This is important given the unprecedented growth of investments in the ARD sector that IsDB and its MCs are currently making and expect to maintain in the coming years. These investments present enormous opportunities for developing robust VCs capable of driving long-term change.

The book addresses three key questions that are crucial to growing inclusive and sustainable VCs at scale. To what extent:

- Can VCs (local and regional) and GVCs succeed in making the institutional business environment more conducive for smallholders, including job creation?
- Can smallholders benefit at scale, in terms of enhanced food security and real household incomes?
- Can country or regional-level smallholder-led VCs penetrate, compete with and benefit from GVCs, and in ways that benefit many farmers?
- Can VCs provide more opportunities for rural youth and women in particular?

These questions reflect the book's theory of change, which is: *'Sustainable and inclusive smallholder-friendly VCs are best developed through public-private partnerships that improve access to innovations to raise productivity and access to finance, buffer farmers and agribusinesses from risks, and develop strong institutions and policies that encourage private sector engagement.'*

The questions will be addressed through case studies from different regions of the MCs and other developing countries. The book's chapters and the examples within them identify the processes by which value can be created along crop and livestock VCs and how that value can be distributed among stakeholders, particularly smallholders.

“ Access to micro-finance would allow farmers to store, process and sell their produce in bulk, giving them the advantage of economies of scale. ”

The case studies presented in this book are deliberately short on problems that constrain production systems and existing VCs. These are generally well known (Neven, 2014). Instead, we focus more on solutions and innovations that can be replicated and scaled up in ways that are sustainable and inclusive. This process is crucial to commercializing smallholder agriculture and taking it beyond the subsistence level. The case studies are also selected to provide insights into how public investments can harness private sector dynamism to improve the productivity and competitiveness of development projects in the ARD sector.

Bringing VC-based solutions to scale is at the heart of this book. To do this, we need well-established, functional partnerships along those VCs (Hartwich et al., 2007). This in turn requires capacity building within national institutions to enable them to identify and map VC development opportunities, undertake chain analysis, identify common interests, and negotiate and design partnerships.



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An aerial photograph of a muddy river. A person in a blue shirt is standing on a wooden structure, possibly a bridge or a small boat, in the upper left quadrant. The water is brown and turbulent. The surrounding land is dry and cracked, with some sparse green vegetation.

CHAPTER 2

COMMERCIALIZATION OF SMALLHOLDER FARMING SYSTEMS: CHALLENGES AND OPPORTUNITIES

SMALLHOLDER

VALUE CHAIN

Ones Karuho¹
and Fadel Ndiame²

KEY MESSAGES

- ◆ Smallholder farmers already operate in a market system, but typically they reap few rewards. Commercialization is about enabling them to use their resources (chiefly land and labor) more formally and efficiently as participants in well-organized value chains (VCs).
- ◆ NGOs, governments, agribusinesses and other upstream actors can all play a part in achieving this. However, piecemeal efforts to address specific aspects of farmers' productivity and/or market participation within a small part of a VC are unlikely to deliver sustainable results.
- ◆ The most successful approach to commercializing smallholders locates them within the entire market system. Identify the key constraint(s) to sustainable smallholder participation: is it government policies, access to resources, or something else? Then, address this using a multi-sectoral, collaborative approach involving all VC actors, governments and NGOs where appropriate.

MARKET SYSTEMS

TRADE

SUPPLY CHAIN

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CHAPTER 2 COMMERCIALIZATION OF SMALLHOLDER FARMING SYSTEMS: CHALLENGES AND OPPORTUNITIES

INTRODUCTION

Commercializing smallholder agriculture is a well-established policy objective in most, if not all developing countries. It is also a policy objective for development institutions, including the Islamic Development Bank. But what do we mean by this? And why is it important?

In answering these questions, it is important to note that smallholders already operate in a commercial system. They interact with agricultural markets routinely, often – though not always – as net buyers, because they do not produce enough to meet their own food requirements. Many smallholders do also produce surpluses, but are unable to realize a benefit because they operate mostly in informal markets where they are price takers, not price makers.

For example, a lack of post-harvest storage and processing infrastructure, or access to appropriate transport, means they might have little choice but to accept the prices offered by passing intermediate traders. At other times of the year, these same farmers may be forced to buy food at retail prices. This weak position within an informal market system limits the ability of smallholders to maximize the value of their own resources and to lift themselves out of poverty.

Commercialization in the context of this chapter therefore means enabling farmers to move out of this position and to run profitable farming enterprises based on effective links to markets and trade corridors. It is not simply about improving smallholder productivity and access to markets, though these are important fundamentals. Rather, it is about taking a systems approach, and shaping the business models of agricultural systems to ensure that they work for smallholders as well as other actors in the VC. When a company takes a system approach, it goes beyond its core business to create partnerships that enable farmers to become more productive, make more money and buy better quality inputs. Case studies of systems approaches are presented later in this chapter. The next chapter of this book also elaborates on the same concept and explains the benefits of including territorial and public-private partnership approaches as part of market systems development.

A system is defined as a grouping of interdependent components linked together to achieve a specific objective or to solve a problem (Cordon, 2013). According to FAO, an agricultural system is an assemblage of components that are united by some form of interaction and interdependence and which operate within a prescribed boundary to

achieve a specified agricultural objective on behalf of the beneficiaries of the system. As such, when we talk about commercializing smallholders, the aim is to orchestrate a system which includes smallholders both for their benefit as well as other upstream and downstream actors. It is about enabling smallholders to respond to market signals and successfully participate in lucrative local, regional and global VCs. This improves the sustainability of each VC, benefitting not just the smallholders themselves, but every actor along the chain.

This chapter starts by explaining the scope of agricultural commercialization, and setting out the context in which different approaches to commercialization take place. This is followed by an overview of key features of the dominant models of commercialization applied by governments, NGOs, and farmer organizations. We then discuss private sector-led commercialization models aiming to achieve more sustainable outcomes and benefits at scale. Finally, we present a summary of lessons learned. The case studies presented in the chapter focus on staple crops such as maize and soybeans through the lens of various delivery models in different geographies.

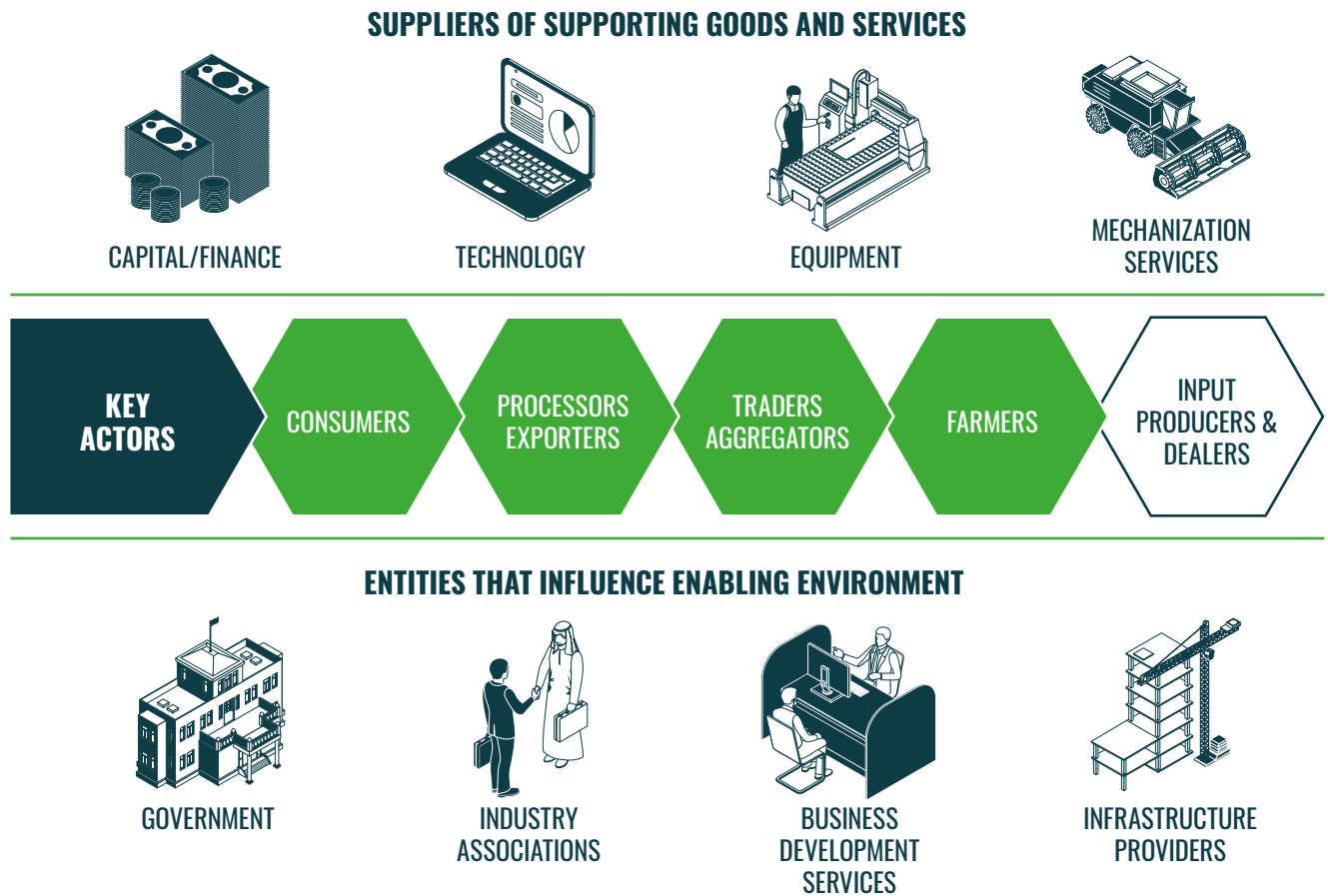
1. SCOPE OF AGRICULTURAL COMMERCIALIZATION

The theory of change for smallholder commercialization assumes that if demand for a particular agricultural commodity is high, private sector companies and farmers will work together to pursue business opportunities along the VC. Commercializing smallholders therefore requires an unlocking of the capacity to supply crops and products that meet consumers' requirements.

There are many intermediaries who play a value-adding role in the process of getting agricultural commodities from

“ The nature and extent of smallholder commercialization will depend on the type of commodities they are able to produce and the types of VCs that exist for those commodities. ”

FIGURE 1 | FRAMEWORK FOR THE DEVELOPMENT OF SMALLHOLDER-FRIENDLY AGRICULTURAL SYSTEMS



Source: AGRA

the smallholder to the final consumer (Figure 1). These intermediaries include harvest and post-harvest service providers, transporters, warehouse owners, wholesalers, processors and retailers. All of these actors – not just the smallholder – must be able to play a commercially viable role for the VC as a whole to be sustainable. Sustainable agricultural commercialization ensures an adequate and stable food supply while rewarding actors along the chain, from farmers to agro-traders to consumers (Mutabazi et al., 2013).

The nature and extent of smallholder commercialization will depend on the type of commodities they are able to produce and the types of VCs that exist for those commodities. Some may be local with minimal value addition, while others will either involve significant processing or tap into high-value global markets, or both.

Examples include:

- Short, local chains linking producers to small agro-processors and then to the final consumption of food products. This is predominately relevant to products such as maize that require minimal or no processing and are consumed locally.
- Medium-sized chains with a number of intermediaries playing some type of value addition function. These will include local traders, wholesalers, storage operators, processors, and transporters. Rice would typically fall into this category, requiring a little more sophisticated processing and then being marketed in urban or peri-urban areas.
- Longer chains linking outputs to more formal markets. These might involve large-scale commercial producers,

working with contract farmers and large-scale processors and transporters. These chains arise for regionally and globally traded crops such as soybeans.

These different types of VCs present their own challenges and opportunities. Generally, channels structured around formal distribution and retail outlets provide more lucrative opportunities for producers, as they allow producers to capture a more significant share of the value paid by consumers. However, these prospects depend on the capacity of farmers to identify opportunities and to meet the greater competitive requirements that such VCs demand.

To participate and take advantage of these lucrative VCs, smallholders need to be able to reliably supply significant volumes of high-quality product at the lowest possible cost. They need to be able to reduce and manage different types of risk, adopt more productive and sustainable technologies and meet product standards.

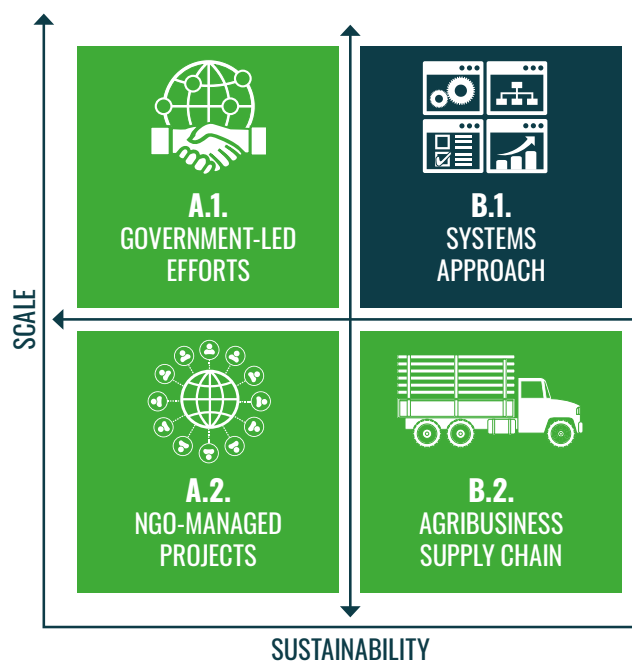
Whatever the nature of the specific VC, the onus is not simply on smallholders to step up their game; rather, it is about fostering a competitive, inclusive, and resilient agricultural system based on value creation and interdependence between suppliers and buyers. According to USAID, *inclusive* VCs deliver a sustainable flow of benefits to a range of actors; *competitive* VCs enable system actors to effectively innovate, upgrade and add value to their products and services to match market demand and maintain or grow market share; and *resilient* VCs enhance actors' abilities to address, absorb and overcome shocks in the market, policy environment, resource base or other aspects of the value system.

2. AN OVERVIEW OF DOMINANT APPROACHES TO COMMERCIALIZING SMALLHOLDERS

There are a handful of broad approaches to enhancing the role that smallholders play in agricultural markets. These are represented in Figure 2, and they span the entire spectrum of production and marketing systems. They include government-led efforts to improve productivity and market access by providing publicly-funded extension services and access to markets, for example, or efforts by NGOs to improve productivity and to group smallholders into cooperatives to increase their bargaining power. Agribusinesses are also key actors here, and their approach might be to provide input packages in return for an assured market.

In Figure 2, scale increases as we move from the bottom to the top, and sustainability increases as we move from left to right. A.1 and A.2 are predominantly led and orchestrated by non-profit actors, while private and profit-driven entities

FIGURE 2 | APPROACHES TO COMMERCIALIZING SMALLHOLDER FARMING SYSTEMS



Source: Authors

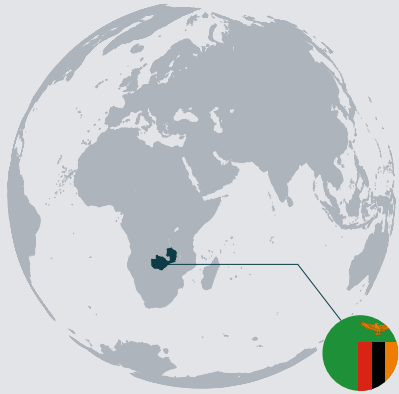
take up positions B.1 and B.2. In practice though, there are many overlaps and interfaces between these different approaches in different VCs, depending on the specific circumstances of those VCs and their geographies. As this figure suggests, a systems approach (B.1) maximizes both scale and sustainability. This would be a scenario in which VC actors from smallholders through to retailers are united in a clear objective and all of them are beneficiaries of a mutually reinforcing system. This scenario is outlined in more detail in section 2.3, following a discussion first of the other scenarios in Figure 2.

2.1 GOVERNMENT-LED APPROACHES TO COMMERCIALIZING SMALLHOLDERS

This category of interventions corresponds to A.1 in Figure 2. It includes all the policy instruments that governments commonly use to improve both the productivity and commercial viability of smallholders.

These instruments can vary widely: governments in African countries have historically supported their agricultural sectors through input subsidies, government grain purchases, and trade restrictions, for example. The provision of public services such as post-harvest storage, processing and transport infrastructure (such as feeder roads) is another example. Some of the more common policy instruments used include input subsidies to increase

CASE STUDY 1 | THE ZAMBIAN FOOD RESERVE AGENCY (FRA) AND ITS PRICE STABILIZATION POLICY



There is a political imperative in Zambia to stabilize the price of maize meal. But established traders, particularly multinationals, complain that competition from food reserve agencies (such as the **Zambian Food Reserve Agency**) limits their ability to plan procurement and invest in their businesses. Companies struggle to take positions when the government is the largest buyer in the market, liable to buy well above market price, and later offload grain to millers well below its value.

Even though national grain reserve agencies often pay higher and pan-territorial prices, the farmer's revenue when selling to such an agency may



be lower than when selling to a trader, once delays and travel costs to receive payment are taken into account. In the case of Zambia, the price that the FRA offers can be 20% higher than the price offered by traders. However, traders pay cash upon delivery, while farmers have to wait three to six months for payment from FRA. Moreover, farmers who sell to FRA must travel to a designated bank to receive that payment. Many find they have to travel to the bank multiple times before the payment is made. The net revenue for farmers who sell to traders

is 13% higher; but taking into account the additional time needed to sell to the FRA, farmers selling to traders actually achieve 30% more revenue.

As this example shows, price stabilization policy instruments used by governments can be ineffective or even do more harm than good. Detailed analyses and comparisons of existing marketing channels are needed before implementing a policy that, however well intentioned, might ultimately not be helpful.

farmers' adoption of yield-enhancing technologies, and price stabilization policies such as floor prices and strategic grain reserves that ensure farmers' access to output markets (Karuho, 2017).

These government-led interventions can potentially have a significant reach in terms of the areas covered and number of farmers reached, particularly when it comes to policy instruments that can be applied nationally (as opposed to the provision of public agricultural extension services that require far more capacity than most governments have). However, questions also arise about the effectiveness and sustainability of some of these policy instruments, particularly when they may have a price distorting impact (see case study 1 on the **Zambian Food Reserve Agency**).

FARMERS HAVE TO WAIT

3-6 months

**FOR PAYMENT FROM
FOOD RESERVE AGENCIES
(SUCH AS THE ZAMBIAN FOOD
RESERVE AGENCY).**

2.2 NGO-LED APPROACHES AND THE USE OF FARMER ORGANIZATIONS

This approach typically includes time-limited projects that work with smallholders in a specific geography to improve their productivity and link them to agricultural commodity buyers. These projects can be transformative if they permanently address a specific constraint faced by smallholders, such as knowledge gaps (see case study 2 on soil management in Western Kenya). There are many such examples of impactful NGO-led work, though a common criticism is that funding constraints often lead to a lack of continuity and sustainability beyond the life of the project. A related problem is that projects carried out by NGOs often fail to achieve meaningful scale, if the impact of the work remains limited to the project area itself. Individual NGOs have capacity constraints, so even if they can effect transformative change to individual farmers or farming communities in terms of production (improving quality and yields) or by organizing farmers to improve their bargaining power, the challenge of introducing systemic change often undermines the long-term impact of the project.

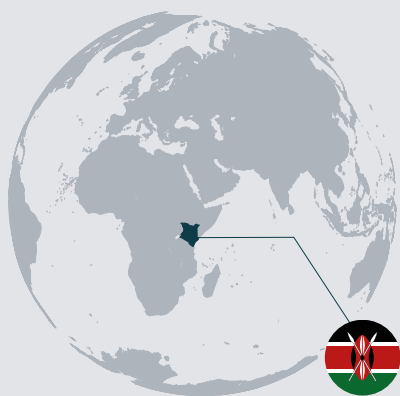
Many NGO-led approaches to commercializing smallholder farming systems have used cooperatives and other forms of farmer organization as a pathway to commercialization. Farmer Organizations (FOs) can be broadly defined as any association of practicing farmers. In practice, the look

and feel of FOs – and their effectiveness – varies widely depending on factors such as their degree of inclusivity to women farmers, and the extent to which they go beyond production and marketing issues to tackle the broader social or economic issues that also have an impact on the ability of farmers to commercialize.

The common underlying principle in this approach is that organizing farmers to meet the demands of VC actors is a critical success factor in enhancing market systems. A well-run, democratic FO gives farmers a common voice and is an effective vehicle for accessing inputs and training, while also increasing bargaining power against upstream market actors.

The diversity of FOs is reflected in their rather chequered history of outcomes in Africa and elsewhere. In some instances, FO attitudes towards markets have been rather defensive, with development facilitators using a 'them versus us' paradigm towards the perceived unscrupulousness of traders. Whatever the specific approach, commercialization efforts based on FOs and led by NGOs have generally failed to reach sufficient scale and sustainability. The reasons for this are varied, but one significant factor has been an absence of the business management skills required to effectively run such an organization and respond to market signals. (See Chapter 7 for further discussion of this issue.)

CASE STUDY 2 | NGO-LED SOIL MANAGEMENT TRAINING TRANSFORMS LIVELIHOODS IN WESTERN KENYA



Soil is a crucial but often neglected aspect of agricultural development, which is why from 2011 to 2018 the Rural Outreach Program (ROP), a regional NGO, implemented two Integrated Soil Fertility Management

(ISFM) projects in western Kenya, funded by the Alliance for a Green Revolution in Africa (AGRA).

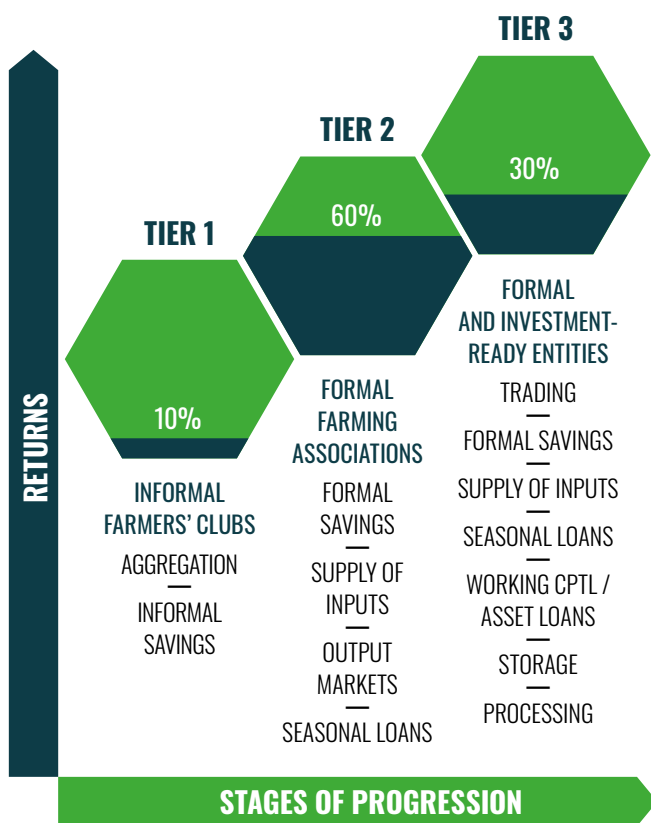
One of beneficiaries was Ann Masakhwe, a widowed mother. By taking part in one of the projects, she learned to move away from continuous land tillage without any inputs – a practice which exhausts soils and leads to ever dwindling yields and susceptibility to pests and diseases. Through the training, she moved towards a system of using blended fertilizers, lime, manure, improved seeds and good agronomic practices such as intercropping.

Before the training, Ms. Masakhwe's 0.25 ha (1/2 acre) plot of maize, beans and indigenous vegetables could barely sustain herself and her children. But her productivity increased when she started intercropping maize with legumes, applying organic manure and using



other ISFM techniques. Eventually, her maize yields grew from 0.5 t/ha to 2 t/ha, and beans from 0.2 t/ha to 0.8 t/ha. She now has sufficient food for her household needs, and a surplus to sell. She invested the income earned from the surplus sales in poultry rearing and a small home-based bakery business, and the income generated from that is paying for tuition fees for her children.

FIGURE 3 | CAPACITY BUILDING OF FARMER ORGANIZATIONS



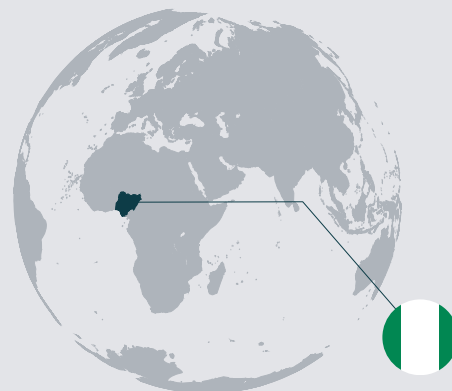
Source: FOSCA

The problem of skills and capacity gaps in FOs was addressed by the Alliance for a Green Revolution in Africa (AGRA) in 2010 when it set up its Farmer Organization Support Centre in Africa (FOSCA). This capacity-building program uses a coaching approach, where FOs are put in different tiers depending on their viability. Tier III is for the genuinely viable FOs, and these organizations act as mentors to those in Tiers I and II. The model is illustrated in Figure 3.

The principle is that a limited set of top-tier FOs (30%) can operate like business platforms and thereby attract more private-sector driven investment and services. From this position, they can also evolve into social business ventures to unlock the potential of smallholders further down the chain, who may be less well-organized.

The Babban Gona model in Nigeria (see case study 3) is an example of this. An investor-owned social enterprise, Babban Gona uses a franchise model to improve the functioning of FOs. It has demonstrated that well-run FOs can be a useful tool for attracting new investment into the smallholder farming sector, and that they do therefore have a place in development efforts.

CASE STUDY 3 | BABBAN GONA'S FRANCHISE SYSTEM FOR DEVELOPING FARMER ORGANIZATIONS



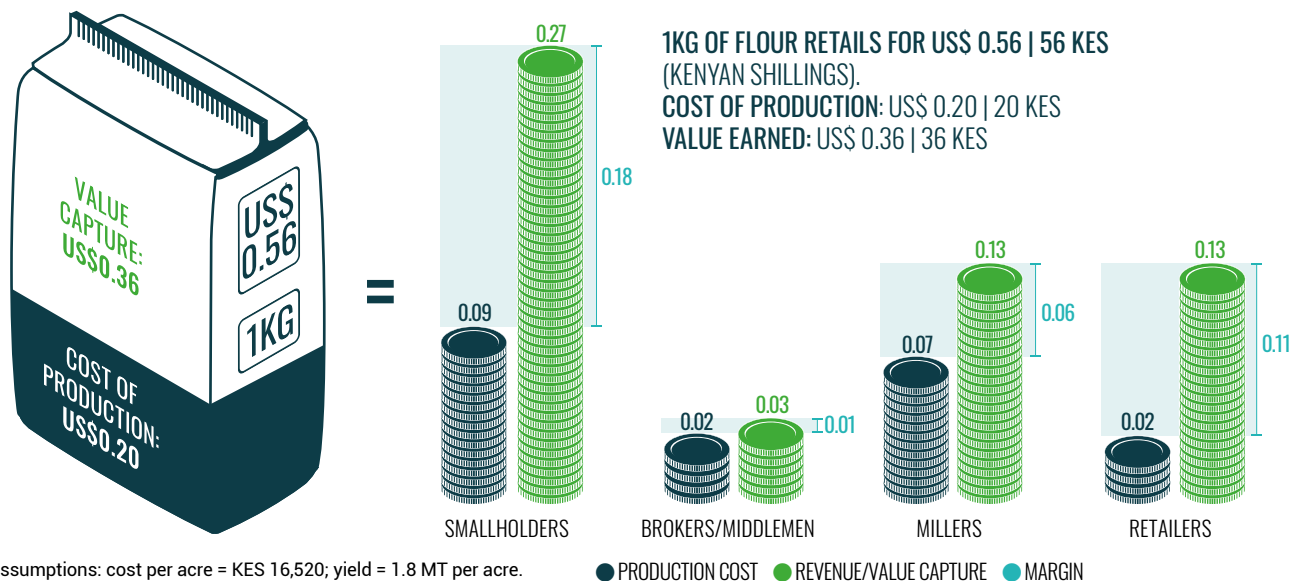
Babban Gona – a social enterprise in Nigeria – works to provide Farmer Organizations with two of the main characteristics they lack: formal financial and business skills, and economies of scale.

The organization franchises a network of small, grassroots-level farmer cooperatives called Trust Groups. Each Trust Group – made up of 3-10 farmers – receives and shares with its members a standardized set of products and services.

This includes training, which covers three main areas: leadership, group dynamics and communication; business skills and financial literacy; and agronomy. Following the training, each Trust Group receives a loan package in the form of inputs (such as seed and fertilizers), and services including soil testing and agronomic support. Once they have harvested their crops, the farmers work with Babban Gona to combine the outputs and access better markets and higher prices.

The model has had a significant impact on yields. In the 2015 season, close to 3,000 smallholder maize farmers involved in the project harvested three or more tonnes per hectare. This is double the national average of 1.5 t/ha. Of course, improved yields are only helpful if they translate into higher incomes, and here too the model is succeeding. The average Babban Gona farmer made US\$ 721/ha, roughly four times the average Nigerian farmer. This higher income is a result of paying less for better inputs, achieving higher yields, and being able to get a better price for those higher yields by selling through the Babban Gona system.

FIGURE 4 | VALUE CREATION IN THE MAIZE FLOUR CHAIN



Assumptions: cost per acre = KES 16,520; yield = 1.8 MT per acre.
Exchange rate: US\$1 for KES 100 in 2019
Source: AGRA

While the Babban Gona approach to commercialization provides some promising results based on the effective delivery of income-enhancing services, it remains to be seen how far this model can scale up. This issue of delivery of impact at scale is also at the heart of the private sector-led approaches to commercialization that are analyzed in the next section.

2.3. PRIVATE SECTOR APPROACHES

If the left-hand side of Figure 2 represents NGO and government-led approaches, the right-hand side represents the private sector. These two boxes (B.1 and B.2) represent ways of using VCs to make smallholder farming enterprises more profitable, through partnerships with private sector companies that should, in theory, give farmers better access to markets and ensure that their production decisions are guided by market signals.

The following sections look more closely at how this can take shape, from individual efforts by agribusinesses to engage with smallholders, to a full market systems development approach involving multiple stakeholders from both the private and public sectors. There isn't necessarily a clear boundary between these activities and nor should they be seen as mutually exclusive. Instead, this side of Figure 2 should be considered as a spectrum in its own right, with the more desirable outcome represented in movement towards B.1 while still including the elements described in A.1, A.2 and B.2.

First, a brief reminder of what is meant by 'value chains' (VCs). As discussed in Chapter 1, VCs are a set of linked activities that work to add value to a product, and they consist of actors and actions that improve a product while linking commodity producers to processors and markets. VCs are generally private sector-led and take on commodities that operate at local, regional and global levels.

Upgrading VCs refers to the process of increasing the profitability of the entire chain through changes in system efficiency, product quality, product differentiation, and social and environmental standards. The perception of value depends on stakeholder and their needs. These may relate to time, place, format, predictability or the scale of the product or service availability.

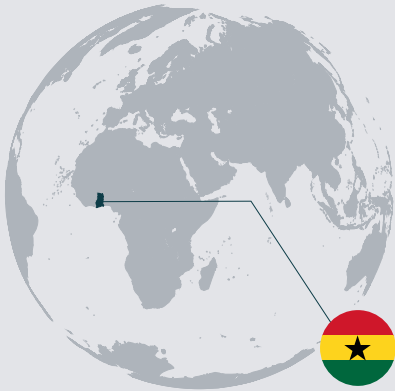
The example below from the Kenyan maize industry is a simple illustration of the idea of value creation and value capturing. It shows the cost of activities performed by each VC actor, and the share of the value captured. (Figure 4)

Creating and capturing value along agricultural supply chains is the essence of VC development. Value flows from the customer and supply flows from the producer. In the example above, the consumer's willingness to pay for 1 kilogram of maize flour in Kenya is KES 56 (US\$ 0.56). The cost of all the activities and inputs required to supply 1 kilogram of maize flour to the customer is KES 20 (US\$ 0.20). The difference between the cost and value is KES 36 (US\$ 0.36), which represents the profitability of the maize supply chain.

Smallholder producing
sorghum seeds for livestock
feed, Burkina Faso



CASE STUDY 4 | YEDENT LEADS AN AGRIBUSINESS CONSORTIUM TO COMMERCIALIZE GHANAIAI SMALLHOLDERS



Yedent is a Ghanaian agribusiness which produces several convenience food products such as a maize porridge (under the Tom Vita brand) as well as processed soy products for the poultry industry.

The business works with 15 community aggregators who buy maize and soybeans from 25,000 smallholders and supply Yedent's factory with those raw materials. Yedent provides the aggregators with working capital to be able to pay farmers upon delivery.

On its own, Yedent would not be able to provide thousands of smallholders with all the inputs they need in order to become successful suppliers of maize and soybeans. And if farmers have access to good seeds but not to fertilizers, they still won't succeed. This is why Yedent partners with other agribusinesses in a consortium including RMG (agrochemicals), Yara (fertilizers), SeedCo (high-quality seeds) and AFAP (business development) to ensure that farmers have access to all of the right inputs in a timely fashion.

During the 2018/2019 season, Yedent provided inputs to 15,000 farmers who planted 1012 ha of maize and soybeans. These farmers planted additional acreage with other crops to sustain their food security and diversify their income. As part of its expansion strategy, Yedent plans to support farmers participating in the project to increase their acreage from 1012 to 2023 ha by 2020.

AGRIBUSINESSES AND CLUSTERS

Individual agribusiness supply chains are represented in section B.2 of Figure 2. In its simplest form, this can be understood as a processor trying to organize its own supply chain and sourcing from its own suppliers. The results of these efforts have often not been transformational for smallholders as many private sector companies of this kind have not fully and actively participated in the production cycle for farmers, preferring to let governments and non-state actors organize and build the capacity of farmers to supply the market.

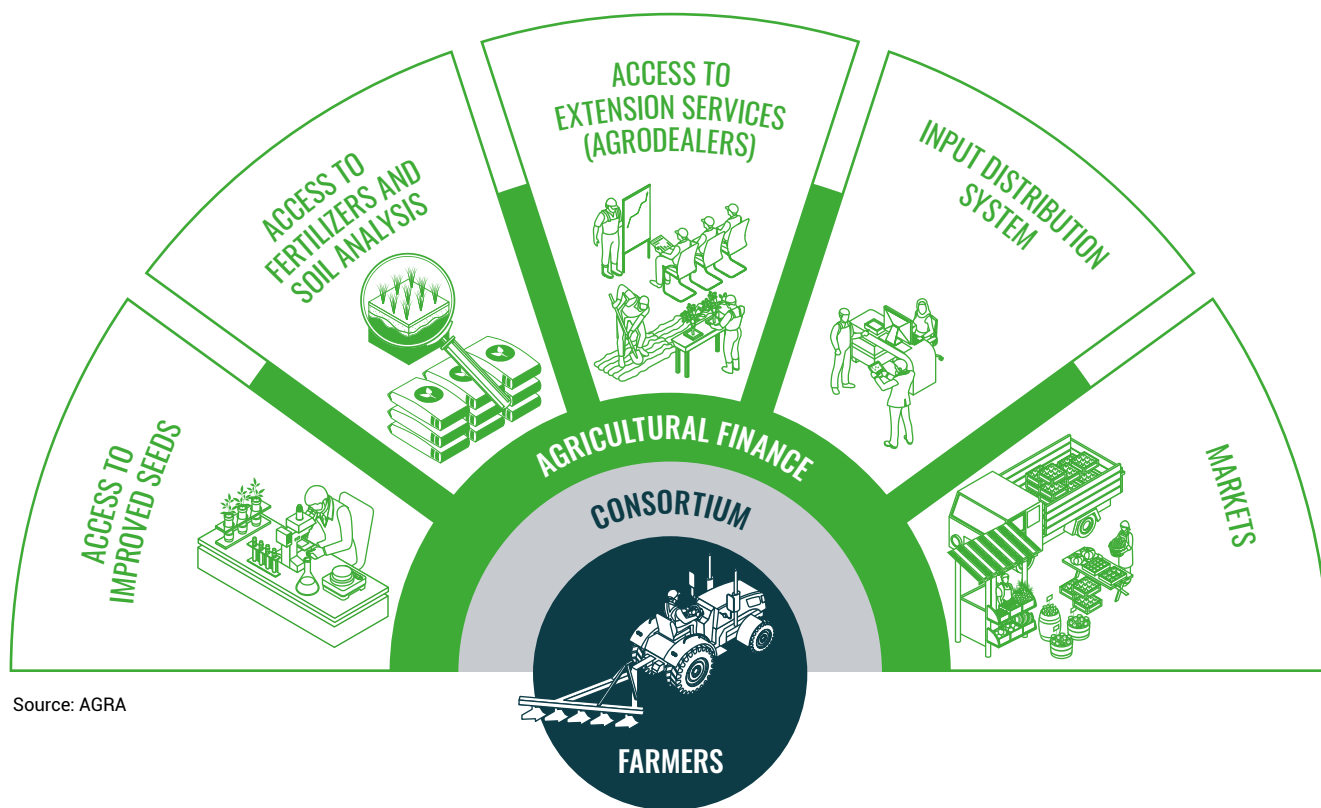
This fragmented approach of leaving governments and NGOs to develop and organize the production side, while the business waits to provide a market opportunity, is generally not the most successful approach to commercializing smallholders. It does not consider how symbiotic relationships between farmers and business enterprises can produce positive feedback loops which create value for all actors, thereby underpinning more sustainable VCs.

A potentially more transformational approach is the development of clusters and corridor approaches with various configurations of private sector actors working

Smallholder potato production, Indonesia



FIGURE 5 | STRUCTURE OF AN AGRIBUSINESS CONSORTIUM



Source: AGRA

together to solve development and business problems by creating joint ventures that benefit from smallholder farming communities, while also delivering benefits to them (see case study 4 on Yedent).

Given their limited production capacity and asset base, smallholders are typically perceived as an unprofitable and risky segment of the market. Cluster approaches can help to overcome this by recognizing that all the actors in the agricultural VC can be more than the sum of their parts when they interact with each other. Vertical and horizontal links between local agricultural enterprises encourage the diffusion of innovation and economies of scale. Clusters can also enhance access to markets and market information. Figure 5 shows how players within a consortium can cover the whole production spectrum, with farmers at the center.

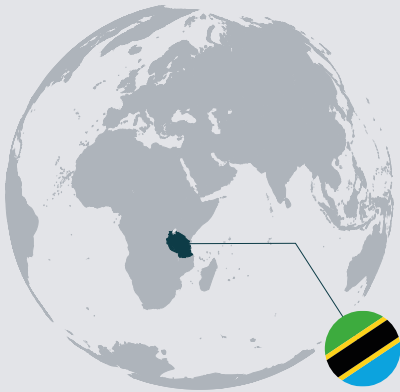
A MARKET SYSTEMS APPROACH

A market systems approach goes beyond the private sector approaches described above in that it attempts to address the underlying causes of market failure. Instead of focusing either very broadly on macro-economic issues, or narrowly on individual businesses, sectors or VCs, it looks at how

systemic changes can lead to sustainable and inclusive growth. Importantly, this is a cross-sectoral approach, with roles for donors, investors, governments and other development actors. It demands a comprehensive view of the whole ecosystem within which smallholders and other VC actors operate. It also involves actors moving beyond their core business activities. All of this helps to determine and align the incentives of key market actors, and to shed light on where interventions are needed.

A systems approach tries to encourage changes in standard practice, rules and regulations, relationships, and formal or informal barriers that influence how actors in a system behave. The aim is to modify the incentives and behavior of businesses and other market actors, including regulators and policymakers. When this is done effectively, it improves the capacity of everyone in the system and unlocks their potential to create value and to benefit from participation. Addressing weak, unstructured or poorly regulated markets in this way has the potential to deliver social and economic benefits with a momentum of their own, overcoming the problem identified earlier of interventions (such as NGO-led projects) that often have time-limited benefits.

CASE STUDY 5 | CROSS-SECTORAL EFFORTS TO REMOVE AN EXPORT BAN



Kenya is a large and lucrative market for maize producers, but until recently it remained tantalizingly out of reach to producers in neighboring Tanzania because of a maize export ban. One of them was Dickens Investment Ltd, a grain processor and trader which has operated in the Iringa region of Tanzania since 2007.

Tanzania's maize export ban affected not just Dickens, but the whole local market ecosystem because it stifled the opportunity for smallholders and other market actors who might otherwise take part in the VC. To try and resolve this systemic bottleneck, the Alliance for a Green Revolution in Africa (AGRA) worked with Dickens and other stakeholders, including the Government of Tanzania, to develop evidence to show that there was no need to impose an export ban on maize. This was successful, and the ban was removed.

The intervention and its impact is an example of systemic change to the market, because it involved cross-sectoral cooperation, including state and non-state actors, to identify and address the root cause of a market failure. With access to an assured market, Tanzanian market actors could once again respond to market signals. Dickens signed supply contracts with local smallholders and



facilitated their access to input credit by guaranteeing payments to input dealers. During the 2018/2019 season, the company supplied 1,000 tons of maize to its clients in Nairobi.

In the context of this chapter, we associate market systems principles with position B.1 in Figure 2. The approach is based on the principles of transparency, efficiency and fairness, and it draws from the field of political economy analysis by focusing on the incentives to act, the enabling environment, and the formal or informal 'rules of the game' as well as official government policies.

Ultimately, the aim is to foster a conducive environment for all market actors to operate and to maintain their incentives for participation. This gives a market system the ability to sustain itself through 'repeat transactions' among actors, leading to lasting and large-scale impact (Tadesse and Shively, 2013). Organizations including the Alliance for a Green Revolution in Africa (AGRA) have advocated this approach to enable the development of smallholder-friendly agricultural systems that are competitive, inclusive and resilient. The same approach has also been adopted by the Islamic Development Bank in its renewed vision of 'Making Markets Work for Development' (IsDB, 2018).

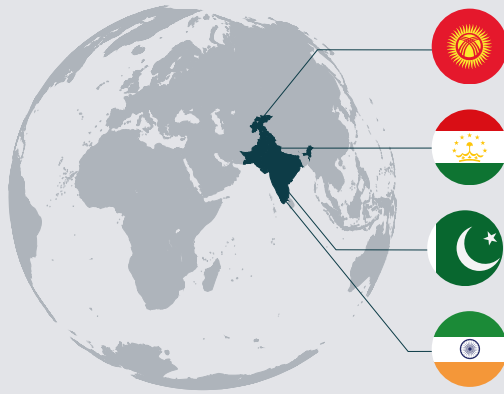
A market systems intervention can take different forms, as the case studies here reveal. In one example presented here, a multi-stakeholder effort to change an export policy was successful in addressing the root cause of a market failure in Tanzania. In another, the complex issue of water

scarcity in rice and cotton systems is addressed through interventions related to production, demand, and regulation, including private and public stakeholders. Finally, we look at how a fertilizer company took a systems approach with farmers in west Africa.

3. LESSONS LEARNED

- Access to improved inputs and agricultural technologies and practices, as well as access to guaranteed or assured markets, are core requirements for smallholders to manage their farming enterprise as a business.
- Scaling up the commercialization of smallholders is not necessarily about size. Smallholders can commercialize regardless of the size of their landholding, and they can participate in relatively short or local VCs on a commercial basis.
- There is a role for government agricultural policies to help commercialize smallholder farming systems, but these should be evidence-based and focus on responding to market signals. Political bias in any direction, or isolated government interventions, can lead to market distortions and can undermine the achievement of scale and sustainability.

CASE STUDY 6 | WORKING TOGETHER TO MITIGATE THE IMPACT OF WATER SCARCITY



Water scarcity is a complex problem that can undermine whole VCs, and it's something that no single actor can tackle on their own. That's why from 2015-18 the Swiss Agency for Development and Cooperation (SDC) and Helvetas Swiss Intercooperation ran a Water Productivity Project (WAPRO) in four countries – India, Pakistan, Kyrgyzstan, and Tajikistan – to tackle water scarcity in rice and cotton production, with stakeholders ranging from farmers to local NGOs, corporations, standards organizations and governments.

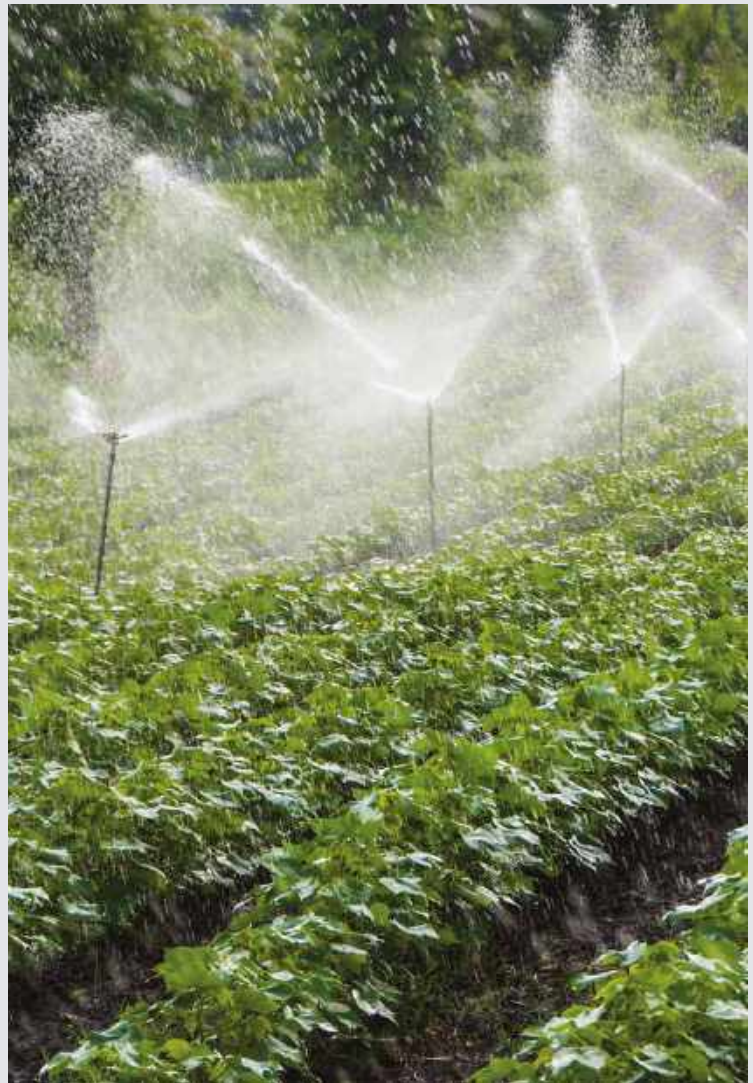
Using this multi-stakeholder approach, the project pioneered a 'push-pull-policy' system to implement practical solutions for 23,600 farmers.

Push: Farmers were trained in new sustainable production technologies, water saving methods, intercropping, soil cover and laser leveling.

Pull: Demand for sustainably produced produce was stimulated by engaging with local VC actors.

Policy: Farmers jointly agreed on how to share water resources and worked with local authorities to adapt regulatory frameworks. These local changes led to national reforms.

This systems approach led to savings of 15-33% in the use of irrigation water, while farmers' incomes increased by 6-32%. By 2019, with the support of the Islamic Development Bank and other stakeholders, the project had expanded to 16 countries in Asia and Africa, 22 partners and 60,000 target farmers.

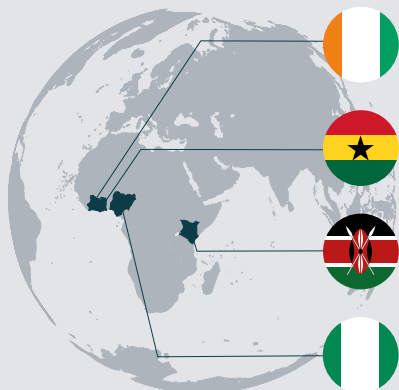


SDC and WAPRO are tackling water scarcity in cotton production in India

WITH THE SUPPORT OF
THE ISLAMIC DEVELOPMENT
BANK THE PROJECT HAD
EXPANDED TO

60,000
TARGET FARMERS IN AFRICA.

CASE STUDY 7 | A FERTILIZER SUPPLIER INITIATES A SYSTEMS APPROACH



OCP Group's core business is to manufacture and supply fertilizer. Many input suppliers do not move beyond their core business, but in 2018, OCP Africa – a subsidiary of the OCP Group – launched a farmer outreach program known as Agribooster.

Working with partners including Syngenta and LAPO Microfinance Bank Ltd, the Agribooster program provides farmers with a complete input package comprising seed, fertilizer, crop protection products and access to financial services. This diverse, cross-sectoral approach (including government buy-in) recognizes that farmers are part of an economic system, and the only way to make them more economically viable is to address their various constraints in a coordinated manner.

In its first phase, the program worked with 51,000 farmers in Cote d'Ivoire, Nigeria, Kenya and Ghana to increase their productivity, produce a surplus and access lucrative markets. The success of the program led in 2019 to the launch of a second phase, aiming to reach 70,000 farmers and increase yields by 20-40%, and incomes by 25%.



OCP Africa's outreach program Agribooster – making a difference in Ghana

- Value creation and value capturing systems should be clearly analyzed for each crop and each market segment as part of the process of deciding on investments for territorial development projects such as agro-clusters, agro-industrial parks, trade corridors, and irrigation.
- Taking a systems view unlocks the potential for smallholders to respond to market opportunities and operate with a profit mindset. This requires all parts of the agricultural market ecosystem need to work in concert both to address market failures and to create positive feedback loops. Partnerships and consortiums are crucial delivery models.

4. CONCLUSION

The commercialization of smallholder farming systems is not a project that takes place solely on the farm. It requires a perspective that spans whole VCs, from farmers to consumers, and situates them within the geography and political economy of agricultural systems. The work of NGOs and governments, whether through policies or projects, can accelerate the commercialization of smallholder farming systems by improving production systems and stimulating agricultural input and output markets that include smallholders. However, these interventions must be handled with care. Short-term projects and poorly conceived input subsidies or price stabilization policy instruments will not produce sustainable results.

Smallholders have immense potential to participate in agricultural VCs in a way that adds value to everyone, not least the farmers themselves, who have an opportunity to graduate from precarious subsistence agriculture into more secure livelihoods. Governments have an interest in achieving this as part of their efforts towards achieving the Sustainable Development Goals. The most promising way of doing so is through a market-based systems approach, in which governments and other non-state actors coordinate their interventions with the private sector to clear bottlenecks in the system and enable smallholders to take their place in a system that rewards everyone. This is, indeed, the strategy that IsDB is championing through its GVC and market-led development support to its member countries.



Cherry plantation, Turkey

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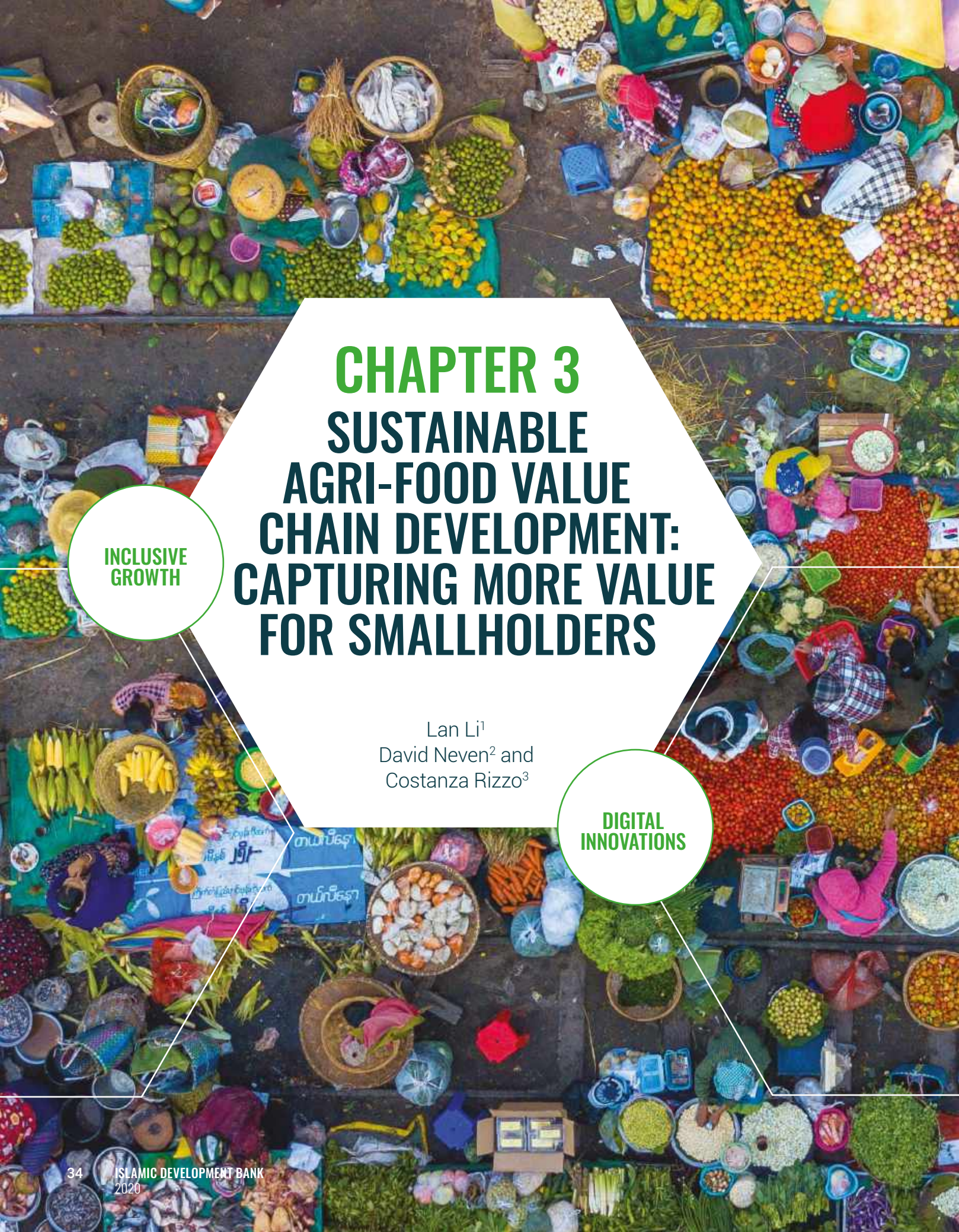
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CHAPTER 3

SUSTAINABLE AGRI-FOOD VALUE CHAIN DEVELOPMENT: CAPTURING MORE VALUE FOR SMALLHOLDERS

INCLUSIVE
GROWTH

Lan Li¹
David Neven² and
Costanza Rizzo³

DIGITAL
INNOVATIONS

KEY MESSAGES

- ◆ The systems approach to sustainable agri-food value chain (VC) development is fundamental to relieving constraints for smallholders and ensuring inclusive and sustainable growth with positive economic, social and environment impacts.
- ◆ The systems approach should be embedded in institutions and interventions for sustainable agri-food VC development. Examples of this include the territorial approach to creating an enabling environment that can support agribusinesses and foster inclusion of the rural poor, and contract farming, and contract farming that can relieve constraints to smallholders' market participation.
- ◆ Emerging digital innovations can transform agri-food systems, create new processes and opportunities and accelerate growth. It is vital to harness their power to benefit smallholders and the environment for sustainable growth.



VALUE CHAIN DEVELOPMENT

CONTRACT FARMING

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CHAPTER 3 SUSTAINABLE AGRI-FOOD VALUE CHAIN DEVELOPMENT: CAPTURING MORE VALUE FOR SMALLHOLDERS

INTRODUCTION

According to the Food and Agriculture Organization of the United Nations (FAO, 2018), low- and middle-income countries considerably increased their participation in global agricultural markets from 2000 to 2015, largely due to the rapid growth of South-South trade among these countries. Emerging economies, in particular Brazil, China, India and Indonesia, have been the main engine for this growth, which has been driven on the one hand by higher demand for agricultural products boosted by rising incomes, and on the other by increased production and exports.

In contrast, Least Developed Countries (LDCs) saw a widening trade deficit in agricultural products as a result of substantial increases in imports and weak growth in exports. Many of IsDB's member countries (MCs) fall into this category. LDCs export predominantly primary and unprocessed agricultural commodities, and growth in agricultural productivity and value addition has been sluggish. Value added per worker in agriculture increased from US\$ 490 in 2000 to US\$ 657 in 2015 in LDCs as a whole. In Brazil, value added per worker in agriculture over the same period leapt from US\$ 4,578 to US\$ 11,149. However, it is worth noting that Brazil's agriculture is dominated by large-scale farming, while LDCs feature predominantly smallholder-based systems.

Agriculture is central to many developing countries, sustaining food security, contributing substantially to export earnings and gross domestic product (GDP) and providing livelihoods to rural populations. Many of the rural poor are smallholders, and they often face numerous barriers to market participation. These barriers include a lack of knowledge and skills, and poor access to markets, inputs, technologies, and financial and support services. The result is low productivity and high transaction costs. These longstanding constraints for smallholders are further compounded by mounting challenges such as more demanding quality and technical standards for agri-food products, rapid technology advancement, and the accelerating impacts of climate change and degradation of natural resources.

The 17 Sustainable Development Goals (SDGs) include a commitment to ending hunger and malnutrition and eradicating poverty by 2030. The pursuit of these goals drives IsDB's investments and the support given to its 57 MCs (IsDB, 2018). The SDGs also call for a holistic and systematic approach to development that is economically, socially and environmentally sustainable. Agricultural production not only needs to be sufficient and productive, but it should also be economically profitable and viable. The value and benefits created should be broadly shared among members in society and contribute to improving the livelihoods of smallholders, women, youth and marginalized communities, while consumption and production should respect planetary boundaries, address the effects of climate change and ensure a thriving natural environment.



Source: UN

The development of agricultural and food value chains, referred to hereafter as agri-food VCs, can play a vital role in agricultural commercialization, rural transformation and economic growth in developing countries. This is particularly true for IsDB's MCs, given the dominance of the sector in the economies of most of them. Agri-food VCs encompass the development of a wide range of value addition activities, agribusinesses, agro-industries and support services from production to consumption. They can generate a wealth of economic and employment opportunities for smallholders, rural communities and beyond.

Chapter 2 of this book introduced the concept of a systems approach (meaning holistic and integrated) to sustainably developing agri-food VCs. This approach is fundamental to identifying and addressing the barriers to linking smallholders to processing, value addition and end markets. Such an approach will help ensure that strategies, investments, interventions and development efforts lead to inclusive growth for smallholders, have positive social and environmental impacts and contribute to achieving the SDGs.

Smallholder rice field, Cote d'Ivoire

“Agriculture is central to many developing countries, providing livelihoods to rural populations.”



This chapter builds on the previous chapter by examining in greater detail the systems approach and selected interventions that tackle the constraints smallholders face, promote sustainable agri-food VC development, and aim to achieve inclusive and sustainable growth in developing countries. Section 1 introduces the systems approach to sustainable agri-food VC development and presents the Accelerator for Agriculture and Agroindustry Development and Innovation (3ADI+) program and a case study on the pineapple sector in Suriname (an IsDB MC) to illustrate the approach.

Section 2 discusses the territorial approach to developing an enabling environment and fostering inclusiveness for agri-food VC development. We review a range of territorial tools of different investment scales with examples of agro-based clusters and Agricultural Transformation Centers (ATCs), along with a case study of the Southern Agricultural Growth Corridor in Tanzania. Section 3 presents contract farming (CF) as an innovative model, particularly for high-value and export commodities. We examine why there is growing interest in it, what the advantages and disadvantages are for farmers and buyers, and what is needed for CF to be efficient, inclusive and responsible, with an example of dairy CF in Bangladesh (another IsDB MC). Section 4 looks at digital innovations, specifically blockchain technology and its potential to enhance transparency, trust and value addition for sustainable agri-food VC development, with a case study on Agrikore, a blockchain-powered digital ecosystem, in Nigeria (an IsDB MC). Finally, we summarize the lessons learned and present a conclusion.

1. THE SYSTEMS APPROACH TO SUSTAINABLE AGRIFOOD VC DEVELOPMENT

Agri-food systems encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of products that originate from agriculture, forestry or fisheries, and parts of the broader economic, social and natural environments in which they are embedded. A sustainable agri-food system delivers food security and nutrition for all in such a way that it is profitable throughout, creates broad-based benefits for society, and has a positive or neutral impact on the natural environment.

Agri-food VCs are an integral part of the agri-food system and can be defined as a set of linked activities that work to add value to a product. They consist of actors and actions that improve a product while linking commodity producers to processors and markets. 'Value added' refers to the difference between the non-labor cost of producing an agri-food product and the consumer's willingness to pay for it, and can

be depicted as the benefits captured by various stakeholders as profits, wages, taxes and consumer surpluses, adjusted for externalities that can be positive or negative.

Systems thinking is concerned with how activities in the system generate values and benefits, how these benefits are distributed among different stakeholders, and how these activities impact the wider social and natural environment. It includes the market systems approach, as discussed in Chapter 2, that integrates different market development approaches to increase and sustain access to markets. Systems thinking is therefore not merely about linking smallholder farmers to a VC, but about creating and sustaining economic opportunities for all VC stakeholders, developing agripreneurships, agri-businesses and agro-industries, providing consumer benefits and increasing positive net externalities.

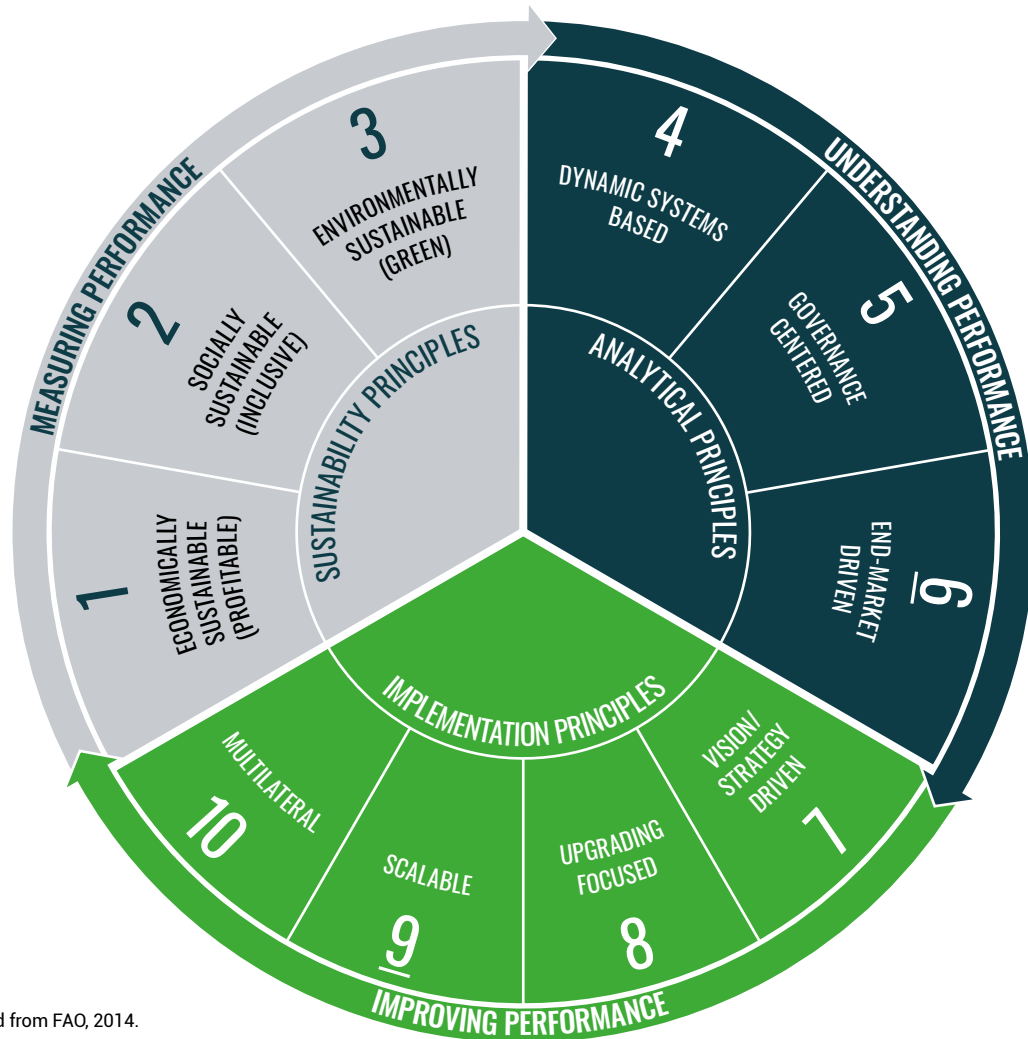
The systems approach to agri-food VC development recognises that sustainable VCs are profitable throughout, with broad-based benefits for society and without permanently depleting natural resources. In other words, it is a holistic 'triple bottom line' approach that recognizes three dimensions of sustainability: economic, social and environmental. The performance and impacts of the agri-food VC should be assessed on these dimensions (see Figure 1)

FIGURE 1 | THE TRIPLE BOTTOM LINE OF SUSTAINABLE AGRIFOOD VC DEVELOPMENT



Source: FAO, 2014

FIGURE 2 | TEN PRINCIPLES OF SUSTAINABLE AGRI-FOOD VC DEVELOPMENT



Source: Adapted from FAO, 2014.

A VC can be considered economically sustainable if the activities carried out by each stakeholder are commercially profitable or fiscally viable for public services. Social sustainability refers to socially and culturally acceptable outcomes in terms of benefits created for women, youth, vulnerable and marginalized groups, and with respect for cultural traditions, improvement of nutrition and health, workers' rights and animal welfare. The environmental dimension includes ecological footprints, biodiversity, preservation of natural resources, food loss and waste, resilience to climate change and overall respect for planetary boundaries.

This holistic vision allows us to detect potential synergies and weigh trade-offs in order to ensure not only a positive *targeted* impact, but an *overall* positive impact on the system. It is only when positive impacts are generated in all three dimensions (economic, social and

environmental) that we can say the agri-food system is truly sustainable. Sustainability is also a dynamic concept in that it is cyclical and path-dependent: the sustainability of a VC's performance in one period strongly influences its performance in the next one. A systems approach should similarly be dynamic.

The systems approach to sustainable agri-food VC development means developing and adopting integrated solutions to agri-food system challenges based on a holistic framing and deeper analysis of problems through multi-stakeholder engagement. It takes a holistic approach to analyzing the situation, identifying problems, developing strategies and assessing development impact. This is captured by 10 interrelated principles (see Figure 2), grouped into three phases of a continuous development cycle.

In the first phase ('measuring performance'), the agri-food VC is assessed in terms of the economic, social and environmental outcomes that it delivers today relative to a vision of what it could deliver in the future (principles 1, 2 and 3). In the second phase ('understanding performance'), the core drivers of performance or the root causes of underperformance are examined (principles 4, 5 and 6). The third phase ('improving performance'), is based on the analysis conducted in previous phases. It entails developing a specific and realistic vision and a core development strategy that stakeholders agree on (principle 7), and selecting the upgrading activities and multilateral partnerships that support this strategy and can realistically achieve the scale of impact envisioned (principles 8, 9 and 10).

These principles are increasingly deployed to guide development programs. Indeed, they underpin IsDB's approach of 'Making Markets Work for Development' by utilizing Global Value Chains (GVC) to unlock the potential of trade in agri-food systems and elsewhere to drive economic growth in its MCs.

The Accelerator for Agriculture and Agroindustry Development and Innovation (3ADI+) program exemplifies the systems approach to sustainable agri-food VC development. 3ADI+ is a joint VC and market system development program spearheaded by FAO and the United Nations Industrial Development Organization (UNIDO). It unites the capacities of local, national, regional and global actors on analysis, technical assistance, investment promotion and facilitating linkages to drive the development of productive and sustainable agri-food VCs in developing countries. 3ADI+ offers multidisciplinary solutions to address challenges across the entire VC in a coordinated, efficient and systematic manner (see Figure 3). It is being implemented to develop the dairy and beef VCs in Bangladesh, the palm oil VC in Tanzania and the pineapple VC in Suriname (FAO and UNIDO, 2018).

THE ACCELERATOR FOR AGRICULTURE AND AGROINDUSTRY DEVELOPMENT AND INNOVATION

3ADI+

PROGRAM EXEMPLIFIES THE SYSTEMS APPROACH TO SUSTAINABLE AGRIFOOD VC DEVELOPMENT.

As case study 1 on Suriname's pineapple sector shows, a systems approach such as that provided by the 3ADI+ program provides a flexible and holistic framework for agri-food VC development. It is almost by definition a complex approach, but this is essential as a way of incrementally and persistently contributing to a paradigm shift that goes beyond economic growth to achieve inclusive and sustainable growth.

It is important to note that public programs and national development strategies are an integral part of the systems approach and are needed to address various constraints on smallholders and limitations to agri-food VC development. Such programs and strategies are in turn financed through tax revenues largely or partly generated by agri-food VCs. Sustainable agri-food VC development must therefore be at the heart of any strategy aimed at reducing hunger and poverty in the long run.

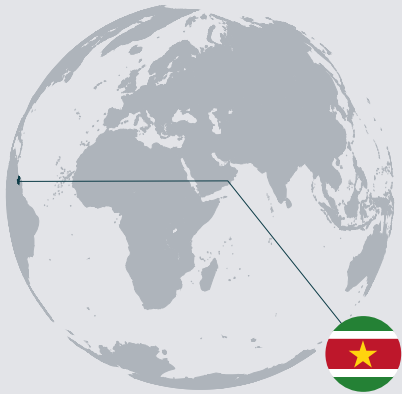
Private sector engagement can help achieve sustainability and scale as part of this strategy. This is, indeed, a core element of IsDB's GVC strategy, which also integrates the 3ADI+ approach. The territorial approach discussed in the next section also lends itself to promoting science, technology and innovation that is relevant to a particular

FIGURE 3 | THE 3ADI+ PROCESS



Source: adapted from FAO and UNIDO, 2018.

CASE STUDY 1 | DEVELOPING THE PINEAPPLE VC IN SURINAME



In 2018, the 3ADI+ program began working with local institutions and actors in Suriname – an IsDB member country (MC) – on a diagnostic study of the pineapple VC (Nguyen, Lienert and Neven, 2019). The study suggested that the pineapple sector has great potential for upscaling to commercial production and processing. Suriname has suitable agro-ecological conditions for pineapple production and unique varieties cultivated by the indigenous population without the use of chemical inputs. However, pineapple production was found to be largely seasonal with producers lacking experience and knowledge in modern commercial production. Pineapples were mainly sold by street and market vendors, with little or no value addition. Infrastructure and support services were underdeveloped, with little cooperation between VC actors.

Based on the diagnostics, a vision and strategy were developed (see Figure 4) which received buy-in from stakeholders across the board. The vision foresees that, by 2030, Suriname will be an established exporter of processed pineapple products to high-quality markets through an inclusive and sustainable VC. A concrete action plan and an investment and resource mobilization plan were proposed to realize the vision. Support from development organizations is expected

FIGURE 4 | 3ADI+ VISION AND STRATEGY FOR PINEAPPLE VC DEVELOPMENT IN SURINAME



Source: Neven et al., 2019

for five years to get the initiative off the ground, after which point the VC will be driven by the private sector and facilitated by the public sector and non-governmental stakeholders.

3ADI+ in Suriname is linking producers and processors to niche markets (such as for organic and Fairtrade pineapples), improving product quality, increasing productivity through sustainable intensification, and promoting an enabling environment to support the agro-industrial

sector, particularly small and medium enterprises (SMEs). More than 1,000 households are expected to achieve increased and sustainable incomes along the chain and at least US\$ 10 million of added value is expected to be generated per year by 2030.

region and/or adaptable for application at scale. This is an important component of IsDB's Member Countries Partnership Strategy, an investment framework developed through a consultative process with the countries.

2. AN ENABLING ENVIRONMENT FOR AGRI-FOOD VCS: THE TERRITORIAL APPROACH

Territorial development initiatives are not a new trend. However, their application in agriculture has expanded considerably in recent years, in recognition of the fact that agricultural production is by its nature geographical and based on natural resources. Agri-food VCs, by extension, are also largely rooted in territories. A territorial approach is therefore one of the operational tools that can be used to develop infrastructure, services and policies for the sustainable upgrading of agri-food VCs and the coordination of actors within them.

In addition, rapid urbanization and population and income growth are the major drivers of growing demand for value-added agricultural products. The value of urban food markets is projected to more than triple to reach US\$

500 billion between 2010 and 2030 in sub-Saharan Africa (FAO, 2017a). About half of the total urban population of developing countries live in small cities and towns with up to 500,000 inhabitants. Territorial development can link these small urban centers and rural areas and integrate their economies to improve urban access to food and drive inclusive rural development. This is of relevance to the IsDB, given that nearly half (25) of its 57 MCs are in Africa.

A study conducted by FAO (2017b) identified and discussed the pros and cons of five territorial development tools. These tools – outlined in Box 1 and Figure 5 – all have a strong spatial dimension in how they attract and concentrate agro-industrial investments for value addition, increasing exports and providing markets for new and existing producers. They have the potential to contribute to the achievement of many objectives, including promoting agro-industrial investment, building competitiveness, enhancing food security and creating jobs.

Territorial approaches are however not a panacea, and their application is in some cases controversial, especially those requiring large investments such as corridors and agro-industrial parks. Their success and sustainability are

BOX 1 | TYPES OF TERRITORIAL DEVELOPMENT TOOLS

Territorial development tools that can be applied to agriculture and agribusiness include:

Agricultural growth corridors:

Development programs to foster promising agricultural sectors within a territory by facilitating access to markets, inputs and services, and leveraging economies of scale along a physical backbone of transport infrastructure, e.g. roads, railways, ports and airports.

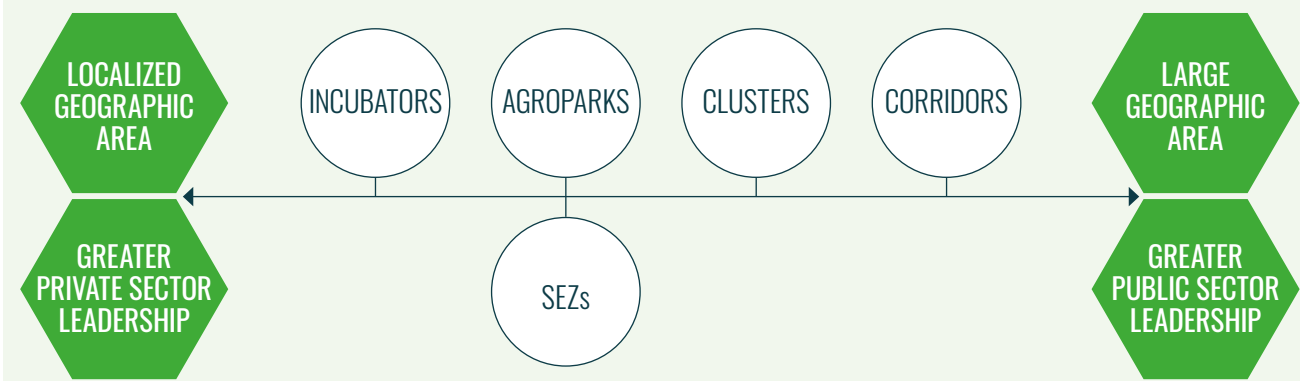
Agro-industrial parks: Centrally managed, physical platforms offering high-quality infrastructure, logistics and specialized facilities and services to a community comprised of agro-industries, agribusinesses, service providers and research and knowledge institutions.

Special economic zones for agro-industry (SEZs): Demarcated geographical areas where firms engaged in agribusiness and agro-industrial activities benefit from a favorable regulatory, business and fiscal environment.

Agro-based clusters: Geographic concentrations of interconnected producers, agribusinesses and institutions that are engaged in the same or related agricultural or agro-industrial subsectors.

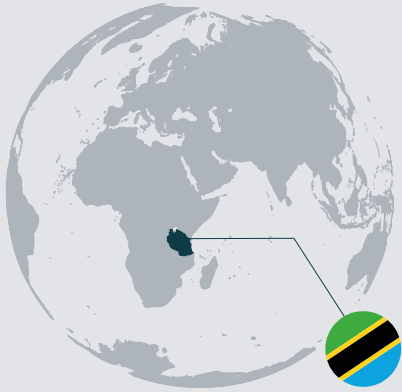
Agribusiness incubators: Enterprise development hubs providing a common environment – often physical, but in some cases virtual – to nascent agro-based companies, where they have access to shared infrastructure, and networking, mentoring and coaching, business and financial services.

FIGURE 5 | GEOGRAPHIC SCOPE AND DEGREE OF PUBLIC AND PRIVATE SECTOR INVOLVEMENT IN TERRITORIAL TOOLS



Source: FAO, 2017b

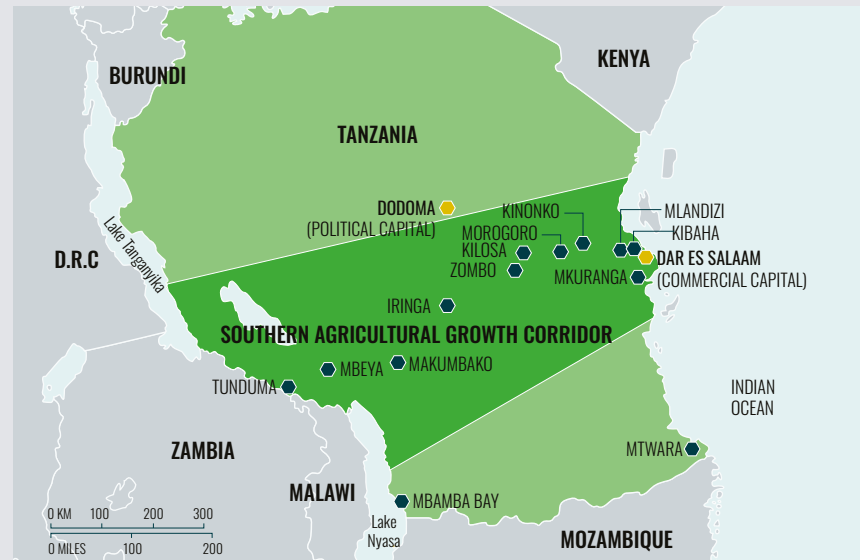
CASE STUDY 2 | INCLUSIVE TERRITORIAL DEVELOPMENT THROUGH THE SOUTHERN AGRICULTURAL GROWTH CORRIDOR OF TANZANIA (SAGCOT)



Agricultural growth corridors are large-scale programs that aim to facilitate access to markets by leveraging economies of scale along a physical backbone of transport infrastructure, e.g. roads, railways, ports and airports. As well as the improvement of connective infrastructure, interventions can include policies, regulations and legislative frameworks, trade facilitation, and human capital development initiatives.

SAGCOT (Figure 6) was conceptualized in 2010 with the aim of attracting investment in inclusive agribusinesses to reduce rural poverty. The corridor covers a total area of about 287,000 km² and covers a population of about nine million people, predominantly smallholder subsistence farmers. The initiative focuses on several sub-sectors with growth and export potential, including tea, tomatoes, soya and dairy. Interventions have addressed infrastructure gaps, particularly for rural roads and electrification, as well as productivity, market access and financial issues. For example, the corridor has introduced modern irrigation and input systems to increase productivity, the use of contract farming to facilitate smallholders' access to markets, and

FIGURE 6 | SAGCOT AND OBJECTIVES TO BE ACHIEVED BY 2030



350,000
HA IN
PROFITABLE
PRODUCTION

100,000
COMMERCIAL
SMALLHOLDER
FARMERS

US\$ 1.2 BILLION
ANNUAL VALUE OF
FARMING REVENUES

420,000
NEW EMPLOYMENT
OPPORTUNITIES

2 MILLION
PEOPLE PERMANENTLY
LIFTED OUT OF
POVERTY

US\$ 3.5 BILLION
MOBILISED IN PUBLIC
AND PRIVATE INVESTMENTS

links between smallholders and financial institutions.

The SAGCOT partnership launched with 20 partners in 2011, which has now increased to 115 partners. US\$ 500 million has been invested in the corridor. In terms of inclusiveness, as of 2018, the initiative had generated new private

**THE SAGCOT PARTNERSHIP
HAS NOW INCREASED TO**

115
PARTNERS

**WITH US\$ 500 MILLION
INVESTED IN THE CORRIDOR**

sector investment worth US\$ 525m, 1500 new jobs, and engaged 100,000 smallholders working directly with the SAGCOT private companies. The number of farmers with access to new innovations is rapidly increasing, with estimates at the end of 2018 standing close to 16,000. The initiative has also facilitated the creation of five Commodity Value Chain Strategic Partnerships specifically for tomatoes, dairy, soya, tea and potatoes to promote a systemic approach to VC development. The success of this program in drawing in the private sector makes it a valuable model for development banks, including IsDB, given the huge financing needs of its MCs for their agriculture sectors and other economic areas (SAGCOT, 2019).

highly dependent on a rigorous assessment of suitability and feasibility, thorough planning, a clear business focus, shared benefits, effective implementation and management, sound governance and diligent monitoring and evaluation.

At the same time, territorial tools do not need to be large scale, and countries can apply them in specific ways to address specific needs. One example is agro-cluster initiatives for high-value and export-oriented crops. When well implemented, these initiatives have the potential to improve coordination, cooperation and competition among VC actors, while enhancing value addition and promoting exports. Countries with historical and natural competitive advantages in the production of high-value crops, such as Somalia for sesame and the Gulf Cooperation Council Countries for date palm, may adopt cluster initiatives to systematically promote these sectors and unleash their growth potential.

Territorial initiatives are not inclusive by default, and specific strategies need to be embedded into their design to foster inclusiveness. But with the appropriate strategies in place, territorial approaches have the potential to reach and benefit thousands of smallholders. For example, one strategy is to link farmers to agro-industrial parks through Agricultural (or Rural) Transformation Centers (ATCs). Such parks are taking root in several IsDB MCs, notably Senegal, partly through IsDB support. Agro-industrial parks help their tenant firms improve competitiveness through co-location and maximizing the efficient use of natural resources. However, they don't always benefit smallholders if inclusiveness strategies are not in place. An appropriate strategy would be the creation of a network of ATCs that are strategically located in high production areas, serving as aggregation or primary processing points, and linked to an agro-industrial park where products are sent for further value addition.

The ATC concept is being promoted in many African countries by the African Development Bank (AfDB) and by IsDB, as mentioned above in the case of Senegal. FAO and AfDB (2019) have, for instance, conducted a feasibility study on ATCs in three African countries: Zambia, Cote d'Ivoire and Tanzania. Although the study addresses mostly staple crops, the potential for accessing the export market is also considered. The Senegal IsDB-funded project is based on two export crops: cashew nuts and mangos. Similarly, Ethiopia is constructing four Integrated Agro-industrial Parks which are expected to be served by a network of Rural Transformation Centers that provide links to producers. The commodities that will be processed in the park include several globally marketed products, including coffee, maize, sesame, sorghum, and horticultural, meat and dairy products.

FIGURE 7 | ADVANTAGES AND DISADVANTAGES OF CF

<p>ADVANTAGES FOR FARMERS</p> <ul style="list-style-type: none"> • Access to markets, inputs, technologies, technical support, credit, services etc. • Increased commercialization • Capacity development (knowledge, skills, experience) • Increased productivity • More secure market and more stable income 	<p>ADVANTAGES FOR BUYERS</p> <ul style="list-style-type: none"> • Consistent supply and quality • Increased efficiency • Lower risks and better risk management • Products complying with standards on quality, safety, social and environmental responsibility • Overcome land constraint
<p>DISADVANTAGES FOR FARMERS</p> <ul style="list-style-type: none"> • Reduced selling options • Lack of bargaining power • Possible delays in payments and input delivery • Possible indebtedness • Environmental risks of growing only one or certain crops • Small farmers with fewer resources are excluded 	<p>DISADVANTAGES FOR BUYERS</p> <ul style="list-style-type: none"> • Reduced supply options • High transaction costs dealing with many small farmers • Risks of farmers breaking contracts and side-selling • Potential misuse of inputs, non-compliance of processes or standards • Reputation risks if things go wrong

Source: FAO, Contract Farming Resource Center

3. CONTRACT FARMING FOR MARKET ACCESS, COORDINATION AND COMMERCIALIZATION

Contract farming (CF) is in essence an agreement between producers and buyers in which both parties agree in advance on the terms and conditions for the production and marketing of farm products, usually including the price to be paid, quantity and quality demanded and delivery dates. The contract may also include information or terms on how the production will be carried out or if any inputs such as seeds and fertilizers, financial assistance and technical advice will be provided by the buyer. CF has been widely practiced for decades, but its recent growth in developing countries is largely linked to rising demand and more stringent quality and sustainability requirements for agri-food products. CF helps buyers to work more closely with partners to source agri-food products that meet these higher standards. The growing interest in CF can therefore be attributed not only to efficiency gains in response to agri-food system transformation and globalization processes, but also to an increasing focus on other dimensions of sustainable growth such as economic and social inclusion and environmental responsibility. CF has the potential to promote inclusive and sustainable

growth by providing smallholders with access to resources, technologies and economic opportunities as well as by observing environmental and social standards.

Engaging in CF can have both advantages and disadvantages (Figure 7) for the actors involved. As mentioned in the introduction to this chapter, smallholders face many constraints and challenges in market participation. CF can help farmers overcome some of these obstacles by connecting them to buyers and markets. Farmers know in advance what products and quality standards are required, when they need to be supplied, and what price will be achieved. This can translate into a more stable income for farmers and allow them to plan better, reducing some of their risks.

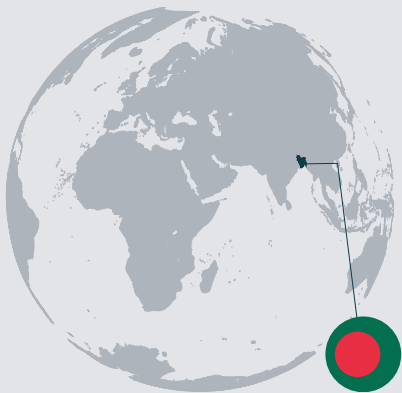
Many CF schemes introduce new or improved technologies such as new seeds and production methods and provide technical training and support to farmers as part of contractual agreements. Contracts may also serve as a collateral for farmers to obtain loans. The development of human capital through experiential learning in producing and marketing products can also result in more resilient and sustained growth in productivity, competitiveness, livelihoods and wellbeing for farmers. Meanwhile, buyers benefit from a more reliable and efficient supply of products

of more consistent quality compared to sourcing from the open market. This is partly because CF arrangements allow companies to introduce production requirements and quality standards and to monitor the process.

Farmers can, however, also face serious problems in CF schemes. These problems include imbalanced power and bargaining relationships between them and the companies they supply, and delays in the delivery of inputs or payments. They also risk indebtedness to the company. This can result in increased dependency and an increased risk of exploitation. Buyers, too, can face certain disadvantages. They may have less flexibility in sourcing supplies if they have committed resources to CF and are contractually bound. Farmers may break the contract and side-sell to other buyers when they are in need of cash, or simply for better prices. Farmers can also misuse inputs supplied on credit or fail to comply with agreed terms relating to the quantity, quality, delivery or production processes for specific crops.

These issues notwithstanding, the growth of CF around the world seems to indicate that the positives outweigh the negatives. There is evidence that the most successful schemes are associated with high-value products and/or those produced for processing or exports. Products that

CASE STUDY 3 | DAIRY CONTRACT FARMING (CF) IN BANGLADESH

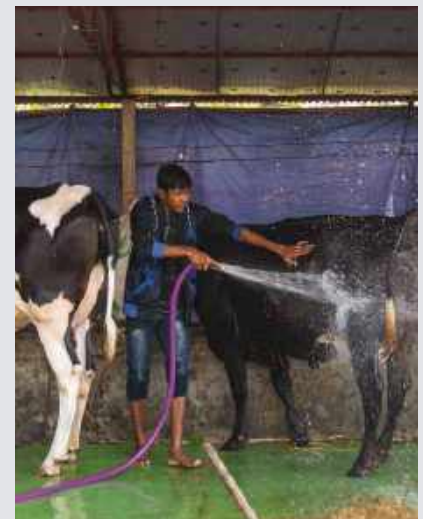


CF accounts for only 4% of milk produced in Bangladesh, with the majority (about 81%) sold through traditional informal markets, and the rest consumed by producer households. However, milk sales through CF are increasing. The three leading dairy companies with CF operations are Milk Vita (owned by a producer cooperative)

and two private companies: BRAC Dairy and PRAN Dairy. A recent IFPRI study examined the impact of CF on contracted dairy farmers in comparison to dairy farmers outside of CF (Islam et al., 2019). The study drew a random sample of 195 farmers under contract either with Milk Vita or Pram, and 207 independent dairy farmers not under CF.

The findings indicate that the factors that are strongly associated with farmers' participation in CF include time spent with cooperatives and other institutions, price fluctuations, and the average price received before participating in CF. Farmers under CF are located further from output markets and have larger herd sizes. They are more likely to have better access to agricultural extension services, better access to credit, and to attend more community meetings.

The study also found that CF has a robust positive impact on welfare



measured by expenditure, farm profit, productivity and food safety practice adoption. Specifically, a one unit increase in the likelihood of participating in CF is associated with a 42% increase in household expenditure, a 35% increase in gross margin per cow and a 9% rise in food safety practice adoption rates.

**CASE STUDY 4 | AGRIKORE'S
BLOCKCHAIN-POWERED DIGITAL
ECOSYSTEM FOR INCLUSIVE GROWTH**



Agrikore is a blockchain-powered digital platform developed by Cellulant, a digital payment provider with operations in various countries. Agrikore connects agri-food VC stakeholders in a digital ecosystem, so that they can do business with each other in a trusted and transparent

environment. These stakeholders include farmers, agro-dealers, output aggregators, input providers, logistics and warehouse operators, insurance companies, financial institutions, government and development partners.

Agrikore is powered by various tools for e-registry, smart contracts, financing and payment, supply chain management and customer relationship management. It registers the identity of all actors in the supply chain, tracks the flow of goods and services, provides a digital marketplace for buyers and sellers of inputs, outputs and support services, executes and manages transactions, and enables secure and transparent financial solutions. The digital ecosystem engages and empowers stakeholders, and embodies a systems approach to sustainable agri-food VC development.

Agrikore has been implemented by the Federal Government of Nigeria to facilitate its Growth Enhancement

Support Scheme (GESS), which is an agricultural program for farmers and agro-dealers to procure agricultural inputs at subsidized rates. Before the deployment of Agrikore, only about 10% of input subsidies were disseminated to farmers nationwide. The digital payment provider Cellulant registered over 12 million farmers to Agrikore within three months, and this has helped about 2,500 input agro-dealers to expand their businesses and extend their services to about four million farmers yearly. The program is not only helping farmers with access to inputs, but has also helped to connect those farmers to buyers and service providers, generating positive ripple effects on communities. Agrikore has helped the GESS increase its success rate to 90%, so that it has now disbursed over US\$ 1 billion worth of fertilizers and inputs to farmers and contributed an additional US\$ 30-40 billion to Nigeria's GDP. (Cellulant, 2020)

have high local demand may be more susceptible to side selling and thus may be less suitable for CF.

CF may not be the only suitable way to organize a commercial relationship, and a good analysis of pros, cons and alternatives should be considered. For CF to truly thrive, it also requires an enabling legal and regulatory framework at the national level to help maximize the benefits and minimize the risks. When set up appropriately, this framework can help recognize and protect people's rights and balance the contractual power of involved parties, provide legal security to contractual relations and facilitate enforcement (UNIDROIT, FAO and IFAD, 2015).

4. DIGITAL INNOVATIONS: BLOCKCHAIN FOR INCLUSIVE VALUE CHAIN DEVELOPMENT

Blockchain is an emerging but rapidly expanding digital technology with great potential for economic, social and environmental impact. It has gained a high profile as the underlying technology for Bitcoin and other cryptocurrencies. However, blockchain has a wide range of applications from finance to business, agriculture, environment, energy, transportation, healthcare, education, governance, public services, philanthropy and development aid. It has the potential to be used as an inclusive technology that can enable and empower smallholders in developing countries.

Blockchain belongs to the broader Distributed Ledger Technology (DLT) family. A blockchain is a decentralized and shared digital ledger that securely records all transactions and data made by a network of participants. Each transaction record or set of information is stored in a block, and blocks are sequentially linked by cryptographic hashes. No single central authority controls data entry, validation, record keeping or sharing, and the history of transactions can be accessed, traced and monitored by all network participants in real time. Records, once entered, are extremely difficult to change and any attempt to alter records will alert all network participants.



STARBUCKS TEAMED UP WITH THE
MICROSOFT AZURE BLOCKCHAIN
SERVICE FOR ITS BEAN-TO-CUP
INITIATIVE, WORKING WITH

380,000

COFFEE FARMERS IN 2018.

The traceability enabled by blockchain simplifies the tracking of goods and services and enhances supply chain efficiency, quality control and food safety. In addition, it can reduce costs and streamline certification, giving smallholders easier access to certification and the associated market opportunities. It can also offer an alternative to certification and provide new opportunities to track product attributes (e.g. climate-smart practices). This enables different forms of product differentiation and value addition for producers. Values and value distribution can also be tracked among VC stakeholders, from producers to consumers. This alleviates the potential power imbalance

among participants, and can enable fairer value sharing for producers of primary commodities.

Blockchain applications are still in an early stage, but they are expanding rapidly in the agri-food sector across the globe. Applications include smart contracts, supply chain management, financial and insurance services, digital marketplaces, quality control and food safety, certification and data analytics, and cover a variety of commodities from coffee to cocoa, honey, cassava, seafood, fish and livestock products.

Many multinational corporations have developed, piloted and implemented blockchain applications in the past 2-3 years. One example is Starbucks, which since 2015 has ensured that 99% of its coffee is ethically sourced. However, it has also realized that transparency is key to its sustainability commitment. It teamed up with the Microsoft Azure blockchain service in 2019 for its bean-to-cup initiative to trace its coffee's journey from farm to cup. Starbucks worked with 380,000 coffee farmers in 2018, and the initiative is set to empower a large number of consumers and farmers by providing transparency along the entire chain.

Blockchain development need not be large in scale. Bext360, a blockchain solutions provider, has worked with a relatively small coffee brand (Moyee) and the FairChain Foundation to achieve transparency and fair value sharing for the brand. Moyee started with 350 smallholder coffee farmers in Limu, Ethiopia in 2017 and provides various training programs to empower farmers and increase their yield and quality. Through Bext360's platform, all stakeholders – farmers, roasters, and consumers – have access to data across the entire supply chain. This data enables a complete analysis of the supply chain to see where value is created and shared. For consumers, it also provides unprecedented levels of transparency around origin and quality.

Overall, blockchain technology is an example of systems thinking at work in agri-food VC development. It can encompass a wide range of actors, technologies, functions and system dimensions, and can tackle a multitude of challenges. Nonetheless, it is not a silver bullet and the feasibility of blockchain to tackle particular challenges and problems needs to be carefully assessed on a case-by-case basis. It is also important to ensure capacity, infrastructure and policies to create an enabling environment for inclusive technology adoption. To this end, IsDB is exploring the application of blockchain and FinTech solutions to increase access to knowledge and financing for farming communities as well as SMEs in its MCs.

5. LESSONS LEARNED

- Many challenges and opportunities for sustainable agri-food VC development are interrelated and necessitate a systems approach based on multi-disciplinary collaboration and multi-stakeholder action. Systems-based thinking, approaches and practical solutions are essential to inclusive and sustainable growth.
- Inclusiveness is not automatic. It requires political will, regulatory and policy frameworks, institutional reforms, transparency and accountability. It also needs an overall enabling environment for inclusive and sustainable development, and engagement, commitment and action by all stakeholders involved.
- The territorial approach, which integrates several methods for sustainable agri-food systems development, stands out as a practical approach to engaging the private sector, attracting investments, developing public-private partnerships, and setting up private-sector led mechanisms for impact.
- No intervention, innovation or solution is a panacea. The suitability and feasibility of all solutions needs to be assessed carefully, and they need to be adapted to tackle particular challenges and problems in a specific context.
- Digital technologies, while offering great potential, may also impose the risk of a greater digital divide that could result in deepening inequality between the least-developed economies and the rest of the world, as well as widening gaps between multinational conglomerates and domestic businesses and SMEs. It is crucial to create an enabling environment for digital innovations – including policies, institutional support, capacity building and infrastructure development – to ensure that smallholders in developing countries benefit from these innovations.

6. CONCLUSION

Sustainable agri-food VC development is essential to achieving the SDGs, especially the ending of hunger and poverty. This chapter has discussed the systems approach to sustainable agri-food VC development and has illustrated it with operational interventions and innovations. These include: the territorial approach to developing an enabling environment and creating operational public-private partnerships; CF to improve market access and coordination and achieve commercialization of smallholders; blockchain technology with the potential to achieve the economic, social and environment impact.

However, this is in no way an exhaustive examination of the topic. Other issues relevant to this chapter which we have not been able to discuss here include trade policies, domestic support policies, public investments, public-private partnerships, other technological innovations (e.g. automation, big data and data analytics, biotechnologies), and climate-smart solutions. These factors are all relevant to a holistic and systematic approach to development and should not be overlooked



“ Sustainable agri-food VC development is essential to achieving the SDGs, especially the ending of hunger and poverty. ”

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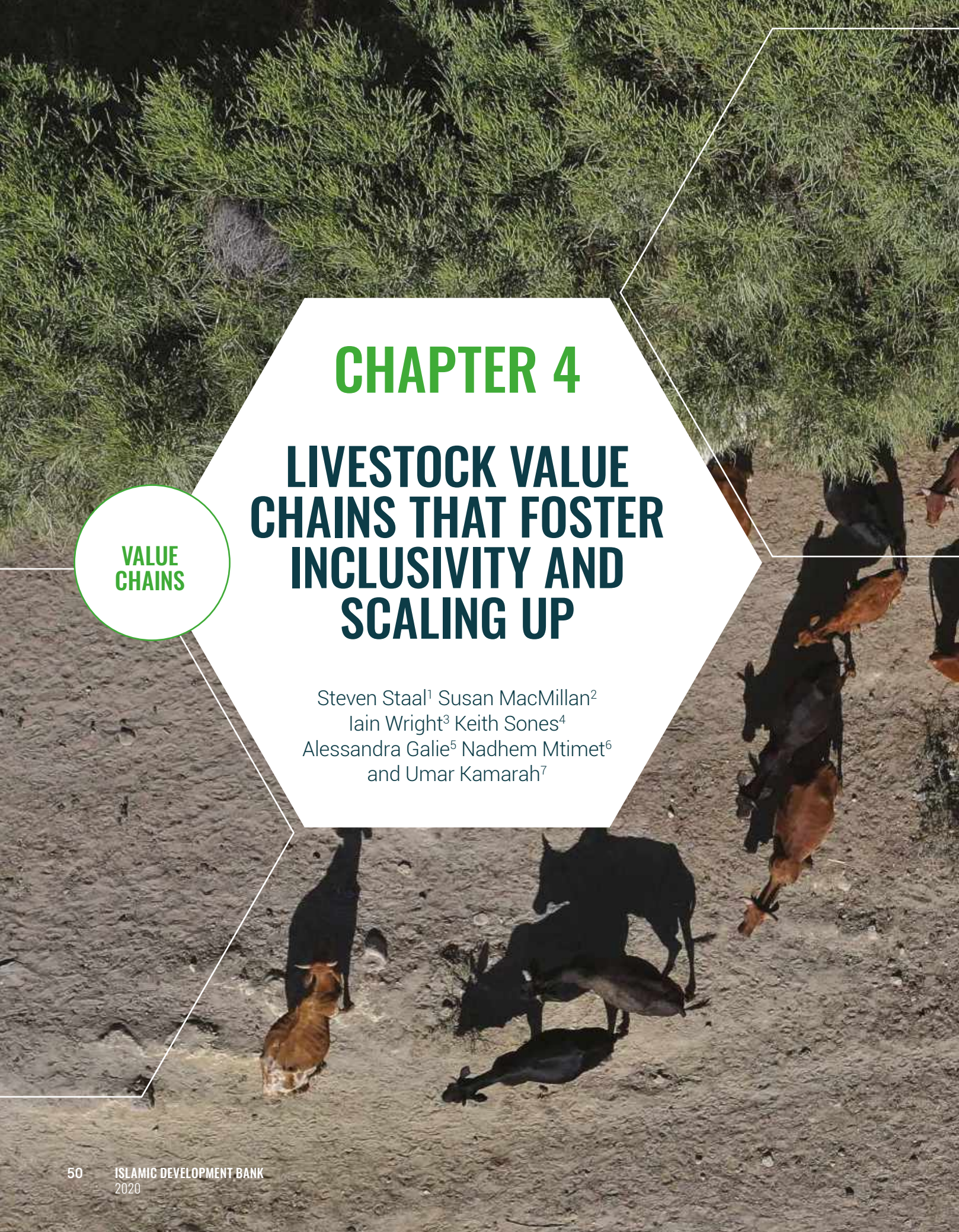
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<http://sagcot.co.tz/>



CHAPTER 4

LIVESTOCK VALUE CHAINS THAT FOSTER INCLUSIVITY AND SCALING UP

VALUE CHAINS

Steven Staal¹ Susan MacMillan²
Iain Wright³ Keith Sones⁴
Alessandra Galie⁵ Nadhem Mtimet⁶
and Umar Kamarah⁷


 INNOVATION

LMIC

INFORMAL
MARKETS

KEY MESSAGES

- ◆ The systems approach to sustainable agri-food value chain (VC) development is fundamental to relieving constraints for smallholders and ensuring inclusive and sustainable growth with positive economic, social and environment impacts.
- ◆ In low- and middle-income countries (LMICs), most livestock products are produced by smallholders and are marketed informally. Demonstrated approaches exist for upgrading these VCs to improve product quality and livelihood opportunities.
- ◆ Livestock VCs also offer particularly important opportunities for income and asset accumulation for women and vulnerable members of society, such as the landless. Livestock can at times be the most valuable asset available to them.

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CHAPTER 4 LIVESTOCK VALUE CHAINS THAT FOSTER INCLUSIVITY AND SCALE



INTRODUCTION

Globally, the livestock sector accounts for roughly 40% of agricultural gross domestic product (GDP) (Salmon et al, 2018). In individual low- and middle-income countries (LMICs), livestock makes a significant contribution to GDP and its importance is growing. Many of those countries are also member countries (MCs) of the Islamic Development Bank. This growth in the role of livestock is driven by several factors, including population increases, urbanization and economic growth. As incomes rise, people consume more high-value products such as meat, milk, eggs, fish, fruit and vegetables, and fewer staple crops. It is estimated that the demand for animal-source foods (ASFs) will double or triple in LMICs by 2050.

This represents a huge opportunity for the many millions of smallholder livestock producers to satisfy this demand and increase their incomes. The vast majority of livestock in LMICs are kept by smallholders and pastoralists. In East Africa, for example, 60-90% of milk is produced by smallholders with fewer than six cows. In India 92% of chicken meat, 92% of sheep and goat meat, 69% of milk and 71% of eggs are produced by farmers with less than 2ha of land. While larger-scale production of livestock will increase, projections show that small-scale production will continue to dominate in the near to medium term. Additionally, of the 750 million poor people who depend

IN EAST AFRICA

60-90%

OF MILK IS PRODUCED BY SMALLHOLDERS WITH FEWER THAN SIX COWS.

on livestock globally, two-thirds are women. Women can often own livestock in situations where they cannot easily own other assets such as land.

Livestock value chains (VCs) can drive economic growth beyond producers in rural areas by providing employment in supplying inputs and services, trading, processing and retailing for men and women, including young people. The UN's Food and Agriculture Organization (FAO) has found that the income multipliers from livestock across a VC can be as high as five, more than crops (Ahuja, 2012).

Animal-source foods (ASFs) such as milk, meat, eggs, fish are also critical to achieving a healthy diet in LMICs. Over 150 million children under the age of five in developing countries are chronically undernourished or stunted. Stunting affects cognitive development and learning ability and can permanently reduce the ability of children to reach their potential. There is a growing body of evidence

that even a small increase in the consumption of ASFs can dramatically reduce stunting and other effects of malnutrition.

In spite of the demonstrated importance of livestock to people and communities, only 2.5% of total agricultural official development assistance to LMICs goes to livestock, according to the OECD. The reasons for this are many and may include decision-makers' prioritizing crops for food security purposes or simply a lack of awareness on their part of the important multiple roles that livestock can play in peoples' lives and communities.

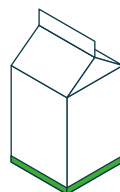
The objective of this chapter is to present evidence and documented experiences in practical options for effective investment in livestock VCs that generate inclusive growth at scale. The chapter is organized around a set of five 'principles' for livestock VC development. For each of these, evidence is presented to help guide decision-makers and development agents. Each principle also includes case studies to provide practical examples of livestock interventions that have been documented to have worked at some scale and in an inclusive manner.

1. RESEARCH THE MARKET AND DO NOT OVERLOOK THE INFORMAL

An initial activity in any livestock VC development effort is to thoroughly understand the market opportunities, whether for live animals or intermediate/final consumer products. The presence of existing markets may not be evidence of growth opportunities.

A useful principle is to look locally before looking further afield. In terms of volume, domestic and regional markets may offer the best opportunities. Although international trade in livestock products such as milk powder and frozen poultry receives a high level of public and media attention, as a share of production such trade is generally low. In 2016, in value terms, only 2.5% of global milk was traded across borders and only 12% of poultry meat. The majority of livestock products are consumed in the countries in which they are produced, which is particularly true in LMICs.

The tendency of many decision-makers is to look for international export opportunities with an eye towards generating hard currency. These decision-makers may not recognize that successfully participating in such markets is constrained by a number of barriers, including the requirements for high standards in product quality, consistent volumes of supply, and adherence to sanitary and phytosanitary (SPS) measures. In a study of potential meat exports from Ethiopia, Rich et al. (2009) found that the costs of such exports were prohibitive, in particular the costs of fattening and finishing the animals to achieve



2.5% 12%

IN 2016, IN VALUE TERMS, ONLY 2.5% OF GLOBAL MILK WAS TRADED ACROSS BORDERS AND ONLY 12% OF POULTRY MEAT.

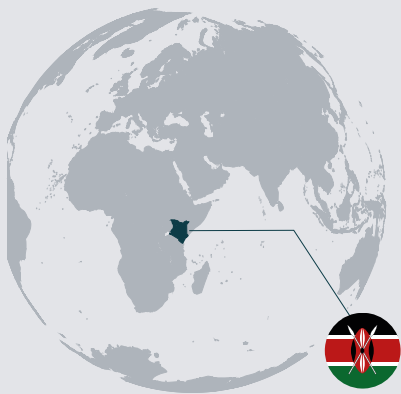
the degree of product quality that the market demanded. This is partly why export abattoirs in Ethiopia operate significantly below capacity.

Regional markets, particularly for live animals but also for products such as milk, can and do present opportunities. In southern Africa, the regional livestock trade has become well developed, based on exports of both live animals and products. In the Middle East, the Arabian Peninsula is a major demand center for live animals such as sheep, including from the Horn of Africa. Uganda, now recognized as having among the world's lowest costs of milk production, has in recent years become a significant exporter of milk powder, mostly to regional markets. Investments by IsDB in the livestock sector there, especially in strengthening producer associations, has contributed to this growth. Additionally, IsDB is supporting regional programs for developing livestock among agro-pastoral communities in several of its MCs in sub-Saharan Africa. The programs operating in the Sahel region of West Africa as well as the drylands of East Africa have a strong emphasis on market development and conflict management between the farming and pastoral communities.

SELLING TO THE BOTTOM OF THE PYRAMID

A principle that some firms have embraced to address domestic markets is that of selling to the 'bottom of the pyramid' (Prahalad, 2009). This recognizes that the large populations of lower income consumers have some degree of disposable income that they will expend if products are low cost and, importantly, are packaged and marketed in ways that suit their needs. A key example is selling milk in small plastic sachets of 200ml, which a number of companies now do in Kenya. The previous standard of 500ml was constrained by the lack of refrigeration in consumer households.

CASE STUDY 1 | UPGRADING INFORMAL MARKETS IN KENYA



A good example of upgrading informal markets comes from the Kenya dairy sector, which for many years has been dominated by raw milk traders.

The Smallholder Dairy Project (SDP) – a collaboration from 1997-2005 between the Kenya Ministry of Livestock Development, the Kenya Agricultural Research Institute and the International Livestock Research Institute – found that small-scale raw milk traders (hawkers) had little understanding of milk hygiene and handling, having never received any training.

The project developed a training curriculum focused on hygienic milk handling, quality control and entrepreneurship. This was done in consultation with the Kenya Dairy Board (KDB) in order to maintain its awareness and approval. After successful piloting, a local NGO was engaged to take over the hawker training.

This led to a multi-component strategy: developing the capacity of the local NGO to conduct the training, including accreditation by the KDB; training market actors in hygiene and entrepreneurship, on a fee basis; and certification of market actors who met specific requirements of the KDB. The result was higher quality milk to



The Smallholder Dairy Project (SDP) developed a training curriculum focused on hygienic milk handling, quality control and entrepreneurship

Photo credit: ILRI/Ben Lukuyu

consumers, including the poor, and more sustainable and remunerative market enterprises. The benefits to farmers and consumers was estimated to be worth US\$ 30 million a year (Kaitibie et al., 2010).

In time, KDB came to view the training and certification of raw milk traders as an intermediate step towards formalizing

the country's small-scale milk trade rather than as a means to promote raw milk trading. Key to bringing about the change was the realization by politicians that they could use this approach to show their constituents that they were constructively addressing the raw milk market issue.

Similarly, there remains strong demand and potentially large markets in many countries for traditional and indigenous products. Indeed, in most LMICs the informal markets for livestock and livestock products are far larger and more important economically than the formal markets. Informal or traditional markets for livestock products are considered here as those that do not apply internationally recognized processing, handling, and packing practices, but that instead depend on traditional local practices to deliver raw or traditionally processed products to customers.

Informal markets are not necessarily operating entirely outside of government regulations. In many cases, informal market actors may pay local municipal operating licenses and fees, even while they may not comply with other regulations or taxes. Also, in many cases the formal and informal markets are closely interlinked and not easily differentiated. In East Africa, local motorcycle milk traders may buy raw milk from formal cooperative chilling plants and then sell it informally as bulk raw milk to individual households or food establishments.

Informal markets exist largely due to an unwillingness on the part of many consumers to pay the higher cost of modern formal processing and, particularly, of modern packaging. Although even poor consumers typically express a desire for higher food quality and safety, their buying practices reveal that their effective demand for these attributes is generally low. Another factor that drives the large role of informal markets is the fact that for many livestock products in LMICs, the market fails to distinguish different grades or standards of products, which removes the possibility of charging higher prices for higher grades and so disincentivizes formal processing.

Because the informal sector generally relies on simple labor-intensive technologies and handling practices, it represents a large and alternative set of development opportunities, particularly for employment. Such markets take advantage of low-cost labor in a context where capital

intensive supply chains are unlikely to be remunerative and the VC financing required may not be easily available. In a study of employment in small-scale dairy VCs in Ghana, Kenya and Bangladesh, Omore et al. (2004) found that the numbers of full-time jobs created for every 100 liters of milk handled daily ranged from 2-3 in the case of mobile milk traders to up to 10 in the case of small-scale processors. The study found that employment per 100 liters was much lower in modern milk processing, where the wages were not significantly higher. Investment in informal market actors is likely to be pro-poor in terms of both the actors themselves and the customers served.

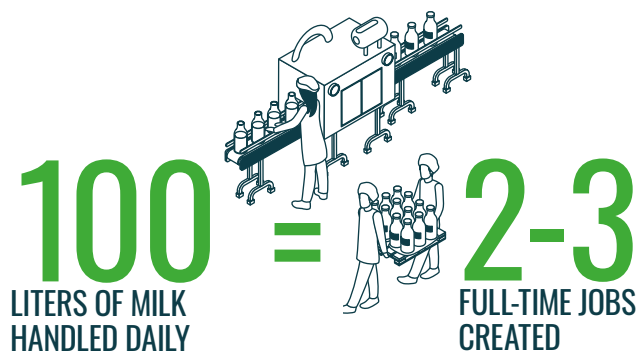
2. TAKE A WHOLE VALUE CHAIN APPROACH

The principles and market systems approach to VC development outlined in Chapters 2 and 3 are equally relevant to the livestock sector. It's important to note, however, that livestock VCs are arguably more complex than many other agricultural commodities, due to the need to handle highly perishable products or live animals on the output side and to effectively deliver sometimes complex technologies on the input side. The dominance of smallholder producers and small-scale market actors amplifies that complexity.

In Chapter 1, VCs were defined as a set of linked activities that work to add value to a product. The value addition occurs when some attributes are added to the product, or it is transported and packaged to suit buyers. However, investing in the processing of a complex livestock product – say a high-end cheese – will not lead to any value addition if there is limited market demand for the product. In contrast, other attributes can increase the value of the product without significantly raising the cost.

For example, a VC for open-range, organic beef with little physical transformation can generate greater value for the farmer (and other VC actors) than a VC for highly processed beef sausage (IFAD, 2016). In the Somali livestock VC, value is created at multiple stages, such as by traders who assemble and transport live animals, and processors which convert low-value hides, skins and even bones to saleable products.

Links between VC actors are critical, but interventions can too easily focus on some subset of the VC while ignoring other parts. To avoid that, approaches have been developed to physically bring VC actors together for information sharing, joint learning and the creation of new links and business relationships. This allows development agencies such as IsDB to better understand those links and to design interventions that optimize their value.



(FAO, Omore et al. (2004))



Farmers' association for dairy production, Burkina Faso. The farmers also produce seed (sorghum) for themselves and for their members

MECHANISMS TO FACILITATE VC DEVELOPMENT

Formal cooperatives are often seen as a reliable vehicle for collective action in livestock VCs, typified by dairy cooperatives, which have seen widespread success in North America, New Zealand, and India. One such success is the Uganda Crane Creameries Cooperative Union (UCCCU) in south-western Uganda, with more than 30,000 members organized into 138 primary cooperative societies. Established in 2005, in part with US\$ 72 million in financing from IsDB, it now collects and markets some 700,000 liters a day (Elepu, 2016).

However, the track record on cooperatives is mixed (see Chapters 2 and 7 for further discussion of challenges related to Farmer Organizations). In general, a more sustainable type of model is seen in a business-oriented group approach that operates more formally as a group enterprise, leading to both financial and social outcomes among members. There are different examples of such models emerging, including case study 2 (p57) of dairy business hubs.

Other public-private mechanisms can be employed to facilitate the natural development of VCs. Innovation

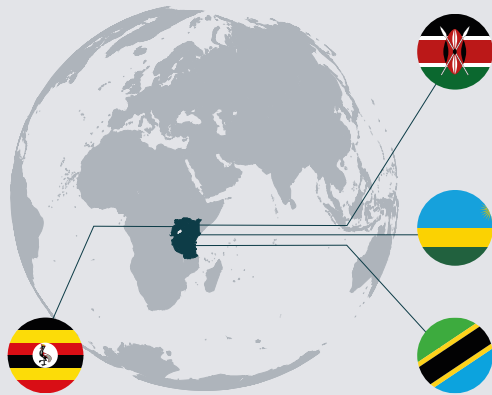
platforms (IPs) are one such mechanism. These are regular gatherings of actors of different types within a particular system. They provide forums for action and learning, where actors come together to address issues of mutual concern (Dror et al., 2015). When targeting VCs, in addition to joint learning and problem solving, IPs aim to create new business relationships. A similar approach is to employ 'business-to-business' (B2B) forums, such as those supported by the East Africa Trade and Investment Hub (EATIH) in several counties in northern Kenya. EATIH

THE ILRI AND EAST AFRICA TRADE AND INVESTMENT HUB (EATIH) B2B FORUMS IN NORTHERN KENYA HAVE LED TO MORE THAN

13,000

SHEEP, GOATS AND CATTLE, WORTH SOME US\$ 2 MILLION, BEING TRADED.

CASE STUDY 2 | DAIRY HUBS IN EAST AFRICA



In east Africa, most milk is produced on small-scale family farms, typically with three or fewer cows. Providing effective veterinary services and links to markets is challenging, especially for remote and scattered farmers, but is critical to ensure economic viability and to support the growth of these enterprises. One way to achieve this is through dairy hubs, an approach successfully implemented by the East Africa Dairy Development project (EADD) in Kenya, Uganda, Rwanda and Tanzania.

The hubs are farmer-owned and managed facilities, based around a milk bulking and chilling center where farmers deliver their daily milk. The hubs can effectively link small-scale farmers to private milk processors. Uniquely, instead of aiming to provide all services themselves as some cooperatives do, the hubs attract public and private service and input providers of feed, artificial insemination, animal health, extension and finance.

A recent study found that compared to farmers who did not use hubs, participating farmers produced 32% more milk per cow per day and their net returns were 45% higher. Another study concluded that participation in dairy hubs increased dairy revenues by an average of over US\$ 1,000 per year and significantly more if the hub focused exclusively on supplying processors (Ngeno, 2018).

meetings have led to more than 13,000 sheep, goats and cattle, worth some US\$ 2 million, being traded.

The concept of dairy hubs has been deployed by the Islamic Development Bank in supporting the development of the sector in its MCs. One key example is the Peri-urban Dairy Development Project in Burkina Faso. VCs of course also include the actors providing services and inputs to producers, and in the case of this Burkina Faso project, a wide range of integrated services for developing the milk VC are provided by dairy cooperatives to their members.

Indeed, relatively intensive dairy or commercial poultry systems will typically require a significant level of reliable inputs, and as these production systems are often geographically concentrated, the provision of services is more economically viable. In contrast, extensive dryland production systems suffer from low economic density, with long distances and poor infrastructure significantly increasing transaction and transport costs. Case study 3 (p59) on Sidai provides one example of how to overcome that. In remote settings, access to veterinary services is often badly needed but very poor. There is a key role here for public services and public-private partnerships. Public investment in vaccination programs and disease surveillance, sometimes through private providers, serves to build the capacity and sustainability of private services.



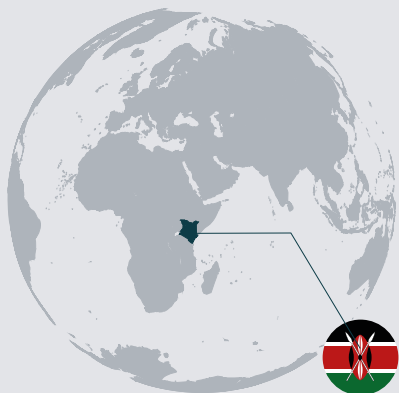
The iCow dairy platform is helping Kenyan farmers track the breeding cycles of their animals.

In the current digital age, ICT-based platforms to provide 'e-extension' services are expanding rapidly, including for livestock specifically. These are being catalyzed by increased access to mobile phones and cellular services by even poor farmers and by private investors who perceive a profitable business model for supplying such services. A useful example that may be replicable is the iCow dairy platform in Kenya, which provides a range of dairy extension messages and guidance through SMS messages, as well as tools to enable farmers to track the breeding cycles of their animals.

“ In many LMIC settings, small-scale livestock production and marketing is dependent on the availability of low-cost labor. ”



CASE STUDY 3 | SIDAI'S FRANCHISE APPROACH TO PROVIDING INPUTS AND TRAINING



Kenya's agricultural sector accounts for around one-quarter of national GDP and supports the livelihoods of 71% of the population. Demand for food is increasing, driven by a 2.5% annual population growth rate, but there remains a significant yield gap: maize

yields are around one third of potential, and a quarter of all livestock die each year. Contributory factors include poor quality inputs, lack of access to inputs in remote areas and knowledge gaps amongst farmers, livestock keepers and agro-input dealers.

To respond to these issues, Sidai Africa Limited was established in 2011 to supply high-quality livestock and crop inputs and training to farmers and pastoralists across Kenya. It operates through a network of branded, professionally staffed, franchised retail outlets, stockists and field staff. Sidai's 'last-mile' service delivery model reaches pastoralists and farmers in remote and under-served locations.

To date, Sidai has established 11 company stores, 87 franchisees, and has 120 employees and its own range of products. It sells to a further 1,500 stockists through its wholesale

business. Sidai currently reaches over 300,000 farmers, and 93% of farmers surveyed report they earn more from their crops/livestock since working with the organization.

In 2019, Sidai secured a US\$ 2.2 million investment from global agri-technology company, Devenish Nutrition. The investment will enable Sidai to further expand its distribution network, launch new products and reach more farmers.



Sidai currently reaches over 300,000 farmers in Kenya

3. IDENTIFY AND MITIGATE POSSIBLE THREATS TO SUSTAINABILITY

As explained in Chapter 1, IsDB's aim is to strive for sustainable VCs that embody the triple bottom line of economic, social and environmental benefits. This applies to livestock production systems and VCs as much as any other. Economic sustainability lies at the core, allowing private financial incentives to drive producer and market actor choices and investments. Environmental sustainability is increasingly important, given the growing attention to the carbon footprint and land use of livestock systems. Institutional or social factors also shape livestock system choices, for example in the context of gender roles which may impact production and marketing.

ECONOMIC SUSTAINABILITY

Economic sustainability may be the simplest to translate, since it is built on observable costs, market prices, shares, and trends. The creation of added value throughout a VC should contribute to its economic sustainability, since all VC actors would be expected to benefit. However, resource factor values and their trends also need to be considered very carefully.

In many LMIC settings, small-scale livestock production and marketing is dependent on the availability of low-cost labor. Studies have shown that ruminant production and

VCs exhibit very limited economies of scale when wages are low, because labor can be easily substituted for the capital investment in equipment needed for scaling up. Thus, milking cows by hand is still dominant across sub-Saharan Africa and South Asia. Systems and technologies that depend on low-cost factor values therefore need to be aware of urban economic growth that pulls labor from rural areas.

For smallholder producers in particular, the multi-functionality of livestock production directly affects economic sustainability by creating non-market and non-cash value to livestock keepers. These include the value of manure for fertilizer and the value of livestock as 'assets' that have an insurance function (as they can be readily sold in a financial emergency) and a financing function (as an inflation-proof store of wealth for planned expenditure, such as children's education or another enterprise).

A number of other product, market and natural resource factors can affect the economic sustainability of smallholder livestock production. Increased consumer awareness of and demand for greater food safety and product quality could eventually be a threat to smallholder livestock sustainability if not addressed. This may be a particular risk to smallholders without the financial means or required levels of economies of scale to invest in the means to comply with food safety and SPS measures.

Livestock-related interventions can directly benefit women's empowerment, livelihoods and incomes, as well as the nutritional status of their families



INSTITUTIONAL SUSTAINABILITY

The capacity of key institutional actors for innovation, management, and investment also play important roles in the success or failure of livestock VC interventions and whether or not they are scaled up. Wanyoike and Baker (2013), for example, found that an unreliability on the part of government partners (e.g., slow decision making or delays in agreed co-investment) can threaten the success of livestock projects. They suggest that flexibility be built into livestock projects to reduce that risk. Such flexibility, for example, might take the form of establishing project mechanisms that allow farmers to make independent decisions and investments, while maintaining needed consultation with public actors.

Exit strategies are crucial to the long-term sustainability of a livestock intervention, in which the benefits of the intervention continue to accrue beyond the life of a project. Typically, promising livestock interventions are scaled up when new actors replicate an initial investment and/or intervention. Ideally, livestock project exit strategies are based on scaling by non-project actors and are linked to market opportunities. Market-driven business models generally have better chances of enabling interventions to endure and grow following the closure of the projects that introduced them.

“ Greater emphasis on climate-smart livestock technologies will allow small-scale producers to increase their livestock productivity while lowering their greenhouse gas emissions 'intensity'. ”

ENVIRONMENTAL SUSTAINABILITY

Livestock production systems that generate significant waste, harming ecosystem services such as biodiversity and soil health, as well as generating significant amounts of greenhouse gases, are receiving increased attention in high-income countries. While these 'externalities' of livestock production systems are less of a concern now in lower-income countries, that is likely to change in future, especially as the developing world's livestock sectors rapidly grow to meet the demand for animal-source foods. Greater emphasis on climate-smart livestock technologies will allow small-scale producers to increase their livestock productivity while lowering their greenhouse gas emissions 'intensity', which is the volume of greenhouse gas generated per unit of product (meat, milk, eggs) produced.

4. USE LIVESTOCK VALUE CHAINS TO ENHANCE GENDER AND SOCIAL EQUITY

In most LMIC settings, women play key roles in livestock systems and VCs, often without a commensurate reward or role in decision making. Here we consider the implications of gender and livestock VCs from two perspectives: a) how women (and other vulnerable members or communities) can contribute to and advance livestock development and, conversely b) how livestock systems and their development can benefit women, contributing to their empowerment and to gender equity.

USING GENDER TO ADVANCE LIVESTOCK DEVELOPMENT

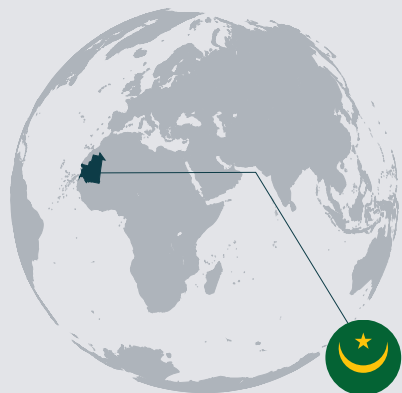
A gender strategy for a livestock VC project requires an understanding of the gendered roles in livestock VCs and at all levels. In developing as well as other countries, interactions among women and men and livestock production technologies and practices can be driven by social norms. For example, in some regions and

production systems, women and men will be expected to fulfill specific distinct roles in gathering feed and feeding livestock, in herding, in cleaning stalls, in milking, and in marketing livestock products and live animals.

These differences make delivery of extension information, such as on animal feeding or health, complicated as livestock production incentives differ among the individuals in a household. The design of technical and extension advice, materials and activities should thus take into consideration the different gendered roles and responsibilities for livestock production and marketing within households. Any technologies being promoted should be matched to the capacity of the responsible individuals.

The ways in which extension is provided must also match gender norms, for example by addressing women and men separately where meetings and conversations between women and men are restricted. Too often, extension meetings are attended largely by men even though

CASE STUDY 4 | TIVISKI, AFRICA'S FIRST CAMEL DAIRY



In 1989, British-born engineer and long-time Mauritanian resident Nancy Abeiderrahmane noticed that the country relied largely on imported dairy products from Europe while having large herds of milk-producing animals, including around 1.5 million camels.

She obtained a loan from a French development organization to establish 'Tiviski', Africa's first camel dairy. The company began producing and selling fresh camel milk and other products made from camel milk in

Nouakchott, the capital and largest city in Mauritania. Among the initial problems to be overcome were that traditionally only the country's poorest camel herders sold their camel milk, the herders were widely scattered and many were nomadic or semi-nomadic, and the country's dairy sector was unorganized, with no formal veterinary or other support services available to the herders.

Despite this, Tiviski developed an effective milk collection system with collection centers at the dairy in Nouakchott and two other towns 200 and 300 kilometers away. The camel dairy managed to change the way herders viewed their animals,

encouraging them to see camels as a business opportunity as well as a way of life. It convinced local stores and consumers of the high quality and safety of its dairy products. It also established an NGO to provide camel herders with feed and veterinary and extension services, with the costs of these deducted from the regular milk payments made to the herders.

These multifaceted services and benefits to both members and the wider community ensured that Tiviski is sustainable and growing. Thirty years on, Tiviski has created more than 200 jobs and supports the livelihoods of more than 1,000 camel herder families.



Mauritania is home to over 1.5 million camels.

responsibility for the tasks being discussed lies with women. Including women as well as men in livestock development just makes good business sense, and can be promoted as such.

USING LIVESTOCK TO FURTHER EQUALITY

Conversely, livestock development can be leveraged intentionally to further gender equality and the welfare of marginalized members of society. Indeed, gender equality is recognized by the United Nations' Sustainable Development Goals (SDG5) as a development objective of its own. Livestock-related interventions can directly benefit women's capacity, empowerment, livelihoods and incomes, as well as the nutritional status of their families. Some livestock-related cooperatives and self-help groups are established specifically to benefit women.

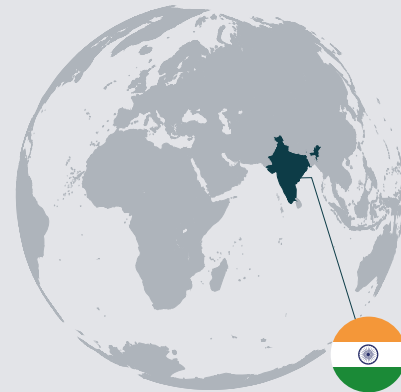
On the other hand, while dairy cooperative membership has long been seen as a means to link poor households with markets and services, women are generally not registered members and have little say in cooperative management. In Bihar, India, women-only dairy cooperative societies have been established to address this. (See case study 5).

Capacity development efforts even in established livestock systems can also benefit women. A retrospective study of the impacts of a large IFAD-supported smallholder dairy program in Kenya found that targeted and well-designed investment in capacity development and awareness can increase benefits to women even within already established smallholder dairy systems (Bonilla et al., 2018).

Small stock such as poultry are important to women in many rural settings, and a review of several such programs in Bangladesh by Fakhru and Jabbar (2005) found that small-scale poultry development can be particularly important to women not only by improving their incomes and livelihoods but also by increasing their social status, an important factor in greater empowerment in some cultures. There are also many livelihood opportunities for women in livestock product processing and marketing, particularly in informal markets due to the low levels of investment typically required and the low barriers to entry.

Livestock VC development can also create opportunities for young people, a growing demographic in sub-Saharan Africa. Some constraints to opportunities for youth, such as lack of access to land and finance, are similar to those for women, but others, such as the disempowering social norms that women can face, are very different. Some opportunities for addressing the finance challenge through Islamic financing tools are

CASE STUDY 5 | A WOMEN-ONLY COOPERATIVE MEMBERSHIP IN BIHAR



Cooperatives have long been seen as an effective mechanism for linking smallholder dairy producers to milk markets and input providers, improving livestock productivity and incomes. The men in a community are typically the officially registered members of a dairy cooperative, and may accrue the benefits, even though women may contribute most of the labor in the dairy enterprise.

Women-only cooperatives have the potential to change this. A study in the Indian state of Bihar examined the income and employment impacts of membership in Women Dairy Cooperative Societies (WDCS) by comparing 80 member and 80 non-member households.

The study found that membership in a WDCS led to statistically significant differences in both mean monthly net income and levels of employment in member households compared to non-members. This was true in both cattle- and buffalo-keeping households. The study did not examine the exact causal mechanism for this result, but the results made clear that, compared to non-cooperative farmers, investing in women's dairy cooperatives increases benefits not just for women but for their entire households. (Kumari and Malhotra, 2016)





Small livestock such as poultry are important to women in many rural settings

presented in Chapter 6 of this book. The main challenge in livestock development for young people is leveraging development to create employment, particularly in VC services such as processing and selling local feeds and using mobile-phone systems for dispensing agricultural extension and market information.

CHILD NUTRITION AND GENDER

Animal-source foods (ASFs) play a vital role in providing high-quality protein and essential micronutrients to undernourished people in LMICs, particularly children and women of maternal age. Carefully designed experimental studies have shown that even small amounts of ASFs provided to children regularly, such as an egg a day, can significantly benefit children's physical and cognitive development (Iannotti et al., 2017). Because women generally make dietary decisions in resource-poor households, diet quality is closely tied to gender. However, livestock production is often market-oriented, with the food products of the animals sold rather than consumed by households. The key is to find effective investments that can translate livestock keeping and production into increased ASF consumption.

“Animal-source foods (ASFs) play a vital role in providing high-quality protein and essential micronutrients to undernourished people in LMICs, particularly children and women of maternal age.”

A study of a livestock distribution and farmer training program in Zambia found that providing cattle or goats to households increased dietary diversity, an important measure of nutritional change. This was found to occur both directly and also by increasing household income, and importantly, the program also led to greater dietary diversity across the wider community (Jodlowski et al., 2016). Any livestock VC development program with a broad set of social objectives should feature mechanisms that increase access to, and consumption of, high-quality ASFs.

5. ENSURE A SUPPORTIVE ENVIRONMENT FOR LIVESTOCK VALUE CHAIN PERFORMANCE

Any supportive environment for livestock VCs necessarily relies on judicious policies, regulations and investments and thus is closely tied to the role of public sector. The private sector can and will likely invest in some supportive VC infrastructure and services where business opportunities exist to provide those, but that will occur only when the policy environment provides stability for such investment. Regional dimensions of the policies need to be recognized, and indeed these feature in the many development programs funded by IsDB, such as the Sahel and East Africa Dryland livestock project mentioned previously.

A starting point is to agree what livestock VC policy objectives are. In the case of livestock policies specifically, FAO (2019) suggests that these objectives should include: a) reduce rural poverty in general, with a specific focus on small-scale livestock producers, b) increase the sustainability and resilience of small-scale producers in the context of climate change, and c) empower small-scale livestock producers economically and politically in an inclusive manner.

Given the competing demands for scarce public resources, investment in agriculture remains low in Africa, in spite of the Malabo Declaration commitment by African nations to invest 10% of their public expenditure on agriculture. One could argue that since the livestock sector of developing countries is generally economically strong and growing, resources should be allocated to other areas, such as crops to feed Africa's fast-growing populations. However, many LMIC countries still rely heavily on imported

livestock products such as milk powder and frozen poultry, while their livestock industries and markets remain largely underdeveloped, operating in an atomized and informal manner. Further, without public support to smallholders in particular, livestock development will continue to be driven by private-sector investment, which on its own is unlikely to contribute sufficiently to rural development. Evidence should be used to prioritize public agricultural investments with the highest potential for rural growth and social as well as financial returns.

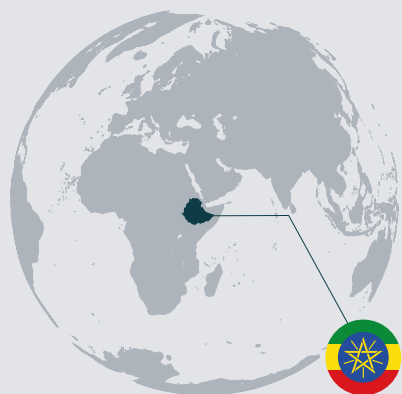
Types of investment that could be done through public-private partnerships include:

- Infrastructure for livestock markets such as holding/quarantine areas and delineated stock movement routes.
- Improved animal genetics, which requires long-term, multi-generational investment to achieve impact and scale.
- Effective data systems for livestock sector monitoring.
- Livestock market information systems, ideally linked to new ICT platforms.
- Support to access financing, including microfinance and emerging innovative forms of livestock insurance.
- Support to national and regional livestock organizations that can play important roles in VC projects.

It is encouraging to note that these integrated investments are reflected in many IsDB-funded projects at both country and regional levels. For instance, both the Peri-urban Dairy Project in Burkina Faso and the East Africa Dryland project in Uganda invest significantly in artificial insemination in



Upgrading livestock production in Mauritania

CASE STUDY 6 | ETHIOPIA LIVESTOCK MASTER PLAN

'Livestock master plans' identify and prioritize livestock development opportunities and strategies and use that knowledge to attract livestock sector investments from national finance ministries, development

agencies, international donor agencies and the private sector.

After achieving a 10% annual growth rate between 2004 and 2014, the Government of Ethiopia developed a Growth and Transformation Plan [II] 2015-2020 to become a middle-income country by 2025. The plan prioritized agriculture and livestock.

The Ethiopia Livestock Master Plan was based on modeling a 15-year livestock sector analysis of potential outcomes of investments in terms of increased production, the value added by technology and service investments, and policy scenarios.

The resulting plan comprised a five-year investment roadmap. The plan assessed the potential medium-term impacts of combined technology and policy interventions and informed

the Ethiopian government's Growth and Transformation Plan II livestock targets.

Since its launch in 2016, the plan has served as the basis for new funding and projects for the country's livestock sector. This includes a new World Bank loan of US\$ 170 million, new donor project financing of US\$ 75 million and new private sector investments of US\$ 200 million, totaling nearly half a billion dollars. The resulting higher livestock productivity and income levels are projected to lift more than 2.3 million Ethiopian livestock-keeping households out of poverty. Although it is too early to assess impacts of the Master Plan, some anecdotal evidence indicates the poultry sector is growing fast as a result of the support put forth in the plan.

“ It is encouraging to note that these integrated investments are reflected in many IsDB-funded projects at both country and regional levels. ”

order to rapidly improve the livestock breeds. Investments that should be viewed with skepticism include the establishment of disease-free zones and commodity-based disease control mechanisms with a view to building export markets. Although they may generate some foreign currency, these projects have generally been uneconomical and require long-term public support to be sustained.

In addition, adequately functioning public services are key. As Wanyoike and Baker (2013) pointed out, the main risk to the success of livestock projects is a lack of reliability in government partners. Regulatory policies should address easing restrictions on imports of key feed materials, animal genetics and veterinary drugs, along with other technologies such as for product processing. Policies that restrict the roles of trained community animal health workers should be reformed, given the evidence that these practitioners have a role to play in rural areas not well served by animal health services otherwise. In general,

regulations should allow the emergence of innovative private forms of service delivery (see case study 3 on Sidai) and facilitate the emergence of innovative forms of collective action and organizational development (such as the producer companies in India), which can better link smallholders to markets, services and financing.

The translation of lessons learned and best practices and policies identified from other countries should not be done in an ad hoc and disjointed manner. It is important to have an integrated livestock VC development strategy, which maps all the desired investments and policies in an overall 'game plan' (FAO, 2019). This should address the limitations of VC actors and partners through incentives or capacity development. In addition, the strategy should go beyond the core VCs of interest and also deal with the support functions and the enabling environment, all tied together by a common vision, ideally developed through a participatory process with stakeholders. An example of this sort of strategy can be seen in the recent development of Livestock Master Plans in Ethiopia, Tanzania, Uganda, Rwanda and India's state of Bihar. Case study 6 (above) describes the stakeholder consultations and modeling exercise that led to a comprehensive plan for the Ethiopian livestock sector, which is now being used as a blueprint for new livestock investment by the World Bank and private-sector players. The IsDB has engaged ILRI to help two MCs (Guinea and The Gambia) develop similar Livestock Master Plans.

6. LESSONS LEARNED

- Livestock marketing chains in LMICs are diverse and complex and involve many types of actors, most of whom generally are not formally recognized and regulated. While this presents governance challenges, it also presents employment and value-addition opportunities.
- Demand for better quality and safer livestock products is growing, creating compliance constraints for many smallholders. At the same time, demand for traditional products is likely to remain strong. New approaches are available to upgrade the quality of informal markets, and these should be used.
- Smallholder livestock systems experience high transaction costs and rely on low-quality and unreliable inputs and services. New organizational models such as business hubs and collective enterprises can reduce those constraints.
- New livestock interventions should consider their probable social and livelihood outcomes to prevent causing unintended harm to smallholders. In general, policy and decision-makers should be aware of the potential trade-offs and impacts among rural communities and for economic growth.
- National policies may choose to increase livestock product supply either by increasing the importation of ASFs, by investing in large-scale livestock production systems, or by growing small-scale livestock systems (or some combination of all three). Each of these has different implications for rural development and livelihoods, economic growth, and foreign currency balances.

7. CONCLUSION

Even while agricultural economies are generally shrinking as a share of national economic activity, livestock sectors are growing due to strong growth in demand for ASFs as consumer incomes rise. This presents livelihood opportunities and the possibility of an increased supply of nourishing ASFs to both the urban and rural poor. In most LMICs, smallholders will continue to play important roles in livestock production and small-scale enterprises will continue to deliver the bulk of livestock products and inputs. The overarching factor challenging in capturing these opportunities is the complexity of the production and market systems. This chapter has presented evidence and examples of different approaches to address those challenges and ensure that sustainable livelihoods continue to be created through the development of livestock VCs.

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CHAPTER 5

DE-RISKING SMALLHOLDER AGRICULTURAL VALUE CHAINS: PROMISING SCALABLE RISK MANAGEMENT SOLUTIONS

INDEX
INSURANCE

RESILIENCE

Jean-Claude Bidogeza¹
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Bashir Jama⁴



CLIMATE CHANGE

AGRICULTURAL RISK

KEY MESSAGES

- ◆ Smallholders face a variety of risks that make their productivity and incomes unstable and unpredictable. These risks – often related to climate change – disincentivize them from investing in high-value inputs to improve their returns.
- ◆ Various forms of agricultural insurance, including sovereign-level products and index-based micro-level insurance, have emerged in recent years and have the potential to protect smallholders from shocks and to unlock greater investment in new agricultural technologies and inputs.
- ◆ A successful scaling up of agricultural insurance in developing countries will depend on improving local technical capacity and policy environments. However, these efforts must be part of a wider menu of risk management and resilience-building measures aimed at smallholders.

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CHAPTER 5 DE-RISKING SMALLHOLDER AGRICULTURAL VALUE CHAINS: PROMISING SCALABLE RISK MANAGEMENT SOLUTIONS

INTRODUCTION

Agriculture has been the foundation of economic transformation throughout history, with countries in Europe, North America, South America and Asia all undergoing development from a predominantly agricultural base (AGRA, 2018). Today, agriculture remains a fundamental sector in developing countries, providing a livelihood for more than half of the population in most parts of sub-Saharan Africa. Many of these countries are also IsDB member countries (MCs). However, the pattern of transformation – with labor moving from low productivity in agriculture to high productivity in services and manufacturing – remains slow, resulting in a failure to reduce poverty.

Agriculture in these countries still attracts low levels of investment because the risks associated with the sector remain high. At the micro level, smallholders – who make up most of the sector – face a variety of resource, yield and price risks that make their incomes unstable and unpredictable from year to year. Farmers are often also at the frontline of catastrophes, particularly climate-related events (Hazell, 2010). For example, 23% of all damages and losses caused by medium and large-scale disasters between 2006 and 2016 were incurred by the agricultural sector in developing countries (FAO, 2017).

As climate change leads to more frequent and severe weather events, agricultural risks will continue to worsen and increase the vulnerability of smallholders and their ability to participate in agricultural value chains (VCs), including those highlighted in the previous chapters of this book. Many smallholders have low climate resilience, and a lack of appropriate risk management mechanisms and ways to cope with shocks. In the worst-case scenario, these farmers may be forced to sell their productive assets (e.g. livestock). Even in the absence of a catastrophe, farmers in these settings tend to limit their investments in high-value inputs, because the risk of losing that investment is too great. This traps smallholders in a cycle of low-risk, low-return agriculture. Enduring poverty is the result.

At the macro level, developing countries as a whole are vulnerable because agriculture is often the backbone of the economy. Extreme weather events and other natural disasters are likely to get significantly worse as a result of climate change. To date, governments in these countries have typically relied on budget reallocations or international humanitarian appeals to assist them in dealing with large-scale shocks. The former compromises government development planning, while the latter takes time to materialize, by which time vulnerable agricultural

households might already be experiencing food insecurity and the forced selling of productive assets.

A number of agricultural risk management instruments and tools have emerged in recent years with the potential to enhance preparedness and responsiveness, and to provide rapid access to predictable financial resources when extreme weather events strike. These initiatives can be public, private or public-private partnerships, and in different ways they all contribute to a de-risking of the sector. This chapter gives an overview of agricultural risk management instruments and models that have been proven to enhance the resilience of smallholder agricultural VCs and to build country-level resilience, thereby unlocking access to other sources of finance and investment in the agriculture sector.

The chapter is structured as follows. Section 2 outlines the function of sovereign disaster management mechanisms in helping countries to build their national-level disaster risk resilience. This section is based on a case study of the African Risk Capacity. Section 3 examines micro-level agricultural risk management instruments and tools, and looks at how these can improve investment in agricultural inputs by smallholders. It includes a case study of Takaful Insurance, a private-sector Islamic insurance product aimed at pastoralists. Section 4 discusses the potential for public-private partnerships to unlock investment in the agricultural sector. This section features a case study of the Nigeria Incentive-based Risk Sharing System for Agricultural Lending. Section 5 explores the impact on smallholders of an IsDB-funded program on building resilience to climate change, with case studies from Burkina Faso and Mali. Finally, section 6 sets out the key lessons learned for scaling up agricultural risk management to achieve inclusiveness, resilience and sustainability.

23%

OF ALL DAMAGES AND LOSSES CAUSED BY MEDIUM AND LARGE-SCALE DISASTERS BETWEEN 2006 AND 2016 WERE INCURRED BY THE AGRICULTURAL SECTOR IN DEVELOPING COUNTRIES.

FAO, 2017



Smallholders in Guinea maintain bunds to control flooding from the sea. Floods create saline soils that are difficult to grow crops in.

CASE STUDY 1 | AFRICAN RISK CAPACITY



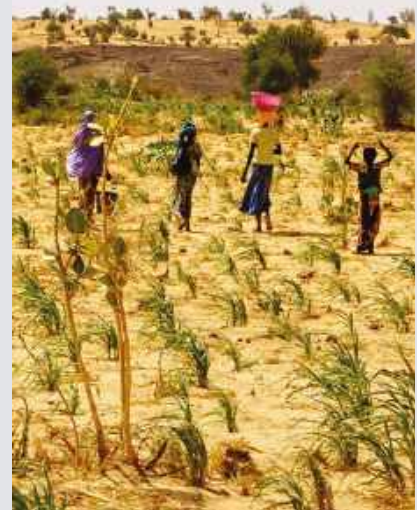
The African Risk Capacity (ARC) was launched by the African Union (AU) in 2012 as an African-owned, index-based weather risk insurance pool and early response mechanism. It combines the concepts of early warning, disaster risk management, and risk finance. ARC's objective is to develop a pan-African response system that enables national governments to respond

more quickly and effectively to the needs of its people in emergencies.

There are two fundamental concepts underpinning the ARC mechanism. The first is that through a risk pool like ARC, the risk of a disaster occurring across several countries can be combined into a single portfolio to take advantage of the natural diversity of weather systems and other natural disasters across Africa. This reduces the costs of insuring risks. The second is that responding earlier to a disaster before its impacts develop into a crisis is more financially efficient and saves lives and livelihoods. An initial cost-benefit study conducted prior to the establishment of ARC estimated that every US\$ 1 spent through ARC would save US\$ 4.40 in post-disaster response costs.

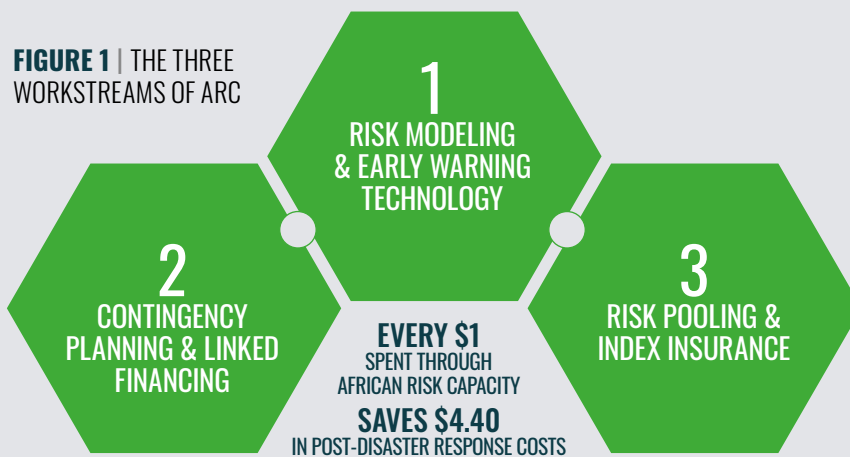
Member States interested in purchasing insurance through ARC commit to a Capacity Building Program through which they complete milestones in

Niger, 2019



(i) risk modeling and early warning technology; (ii) contingency planning and linked financing; and (iii) risk pooling and index insurance. These three 'workstreams' are represented in Figure 1 and are further explained below.

FIGURE 1 | THE THREE WORKSTREAMS OF ARC



Source: ARC

WORKSTREAM 1

Risk modeling and early warning technology. Technical experts in key ministries and departments are trained in the use of Africa RiskView, a satellite weather surveillance software developed by ARC to estimate disaster risk. This enables governments to develop a country risk profile and to determine the appropriateness of using various risk management tools such as ARC.

WORKSTREAM 2

Contingency planning and linked financing. Countries wishing to secure insurance from ARC must develop a Contingency Plan governing the use of any ARC insurance payout. This must be approved by the ARC Governing Board. The contingency planning process aims to ensure that potential payouts are used quickly and effectively and that ARC funds reach the most vulnerable populations in a timely manner.

WORKSTREAM 3

Risk pooling and index insurance. As a final step, key government departments are introduced to risk transfer concepts and ARC insurance so that the government can select the level of risk it wishes to transfer to ARC and the frequency of payouts. These risk transfer parameters are driven by a consideration of the type of coverage the government believes it will need, and the level of the premium it can pay.

Since 2015, ARC has underwritten policies that provided drought insurance coverage amounting to US\$ 580 million. Drought has triggered payments to two million people in Mauritania, Senegal, Malawi and Niger amounting to US\$ 37 million (see Figure 2). In 2019, Senegal and Cote d'Ivoire were in line to receive disbursements of nearly US\$ 22 million and US\$ 700,000, respectively, at the end of the agricultural season.

1. SOVEREIGN DISASTER MANAGEMENT MECHANISMS

Extreme weather events are becoming more frequent and extreme. Whether they are droughts, floods, extreme heatwaves or tropical cyclones, these events are a drain on the economies of developing countries. This is particularly the case for countries where agriculture is the cornerstone of the economy, and where there is little or no climate resilience infrastructure in place. Many IsDB MCs fit this description, particularly in Africa, where rain-fed agriculture supports the livelihoods of millions of people.

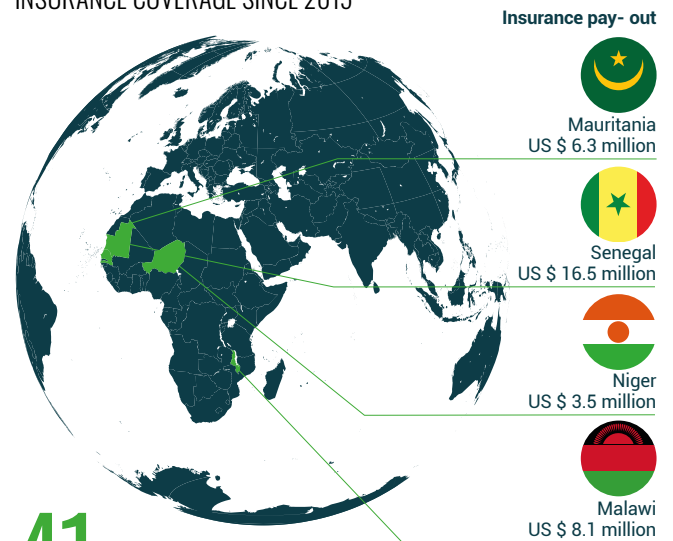
These countries have always been vulnerable to natural climate variability and are now increasingly affected by the impacts of climate change. One IsDB MC, Mozambique, recently experienced two cyclones (Idai and Kenneth) and the damage from those events destroyed huge swathes of agricultural land, undermining livelihoods and exacerbating food insecurity.

As currently structured, the system for responding to natural disasters is not as timely or equitable as it could be, with much of the cost borne by farmers and vulnerable households. A lack of early response interventions worsens poverty and food insecurity in the days immediately following a disaster. International humanitarian assistance through the traditional appeals system is secured on a largely *ad hoc* basis after disaster strikes. Many African governments are forced to reallocate funds in national budgets from essential development activities to crisis response. In both cases, responses mostly arrive when lives and livelihoods have already been lost, productive assets have been depleted, and development gains reversed.

Sovereign disaster risk management mechanisms have emerged in recent years as an alternative way of responding to such events. The principle of these mechanisms is that national governments are the insurance buyers, and they secure access to financial resources before a disaster strikes. These are parametric forms of insurance, meaning they pay out when certain conditions are triggered (such as a drought, or another acute weather event). Pooling risk reduces the cost of insurance, and the payouts quickly provide governments with the funds they urgently need in the days and weeks following a disaster.

Examples of such mechanisms include the Caribbean Catastrophe Risk Insurance Facility, and the African Risk Capacity (see case study 1). These mechanisms are still relatively young, but a recent study by the World Resources Institute (Martinez-Diaz et al., 2019) has found that they are maturing into platforms with regional political backing, skilled personnel, risk modelling capabilities, and strong relationships to the reinsurance sector and capital markets.

FIGURE 2 | ARC'S ACHIEVEMENTS IN OFFERING DROUGHT INSURANCE COVERAGE SINCE 2015



41
TOTAL NUMBER OF POLICIES SIGNED

US\$ 81 MILLION
PREMIUM PAID

US\$ 580 MILLION
CUMULATIVE INSURANCE COVERAGE

58 MILLION
CUMULATIVE NUMBER OF PEOPLE INSURED

Source: ARC

2. MICRO-LEVEL FINANCIAL INSTRUMENTS TO REDUCE AGRICULTURAL RISKS

Agricultural production is subject to many risks and uncertainties. The previous section focused on the growing risk of extreme weather events, but farmers actually face a wide range of hazards beyond this. Their crops and livelihoods can be threatened by pests and diseases, market instability or political unrest. Whether or not these are directly related to agricultural production, they can certainly have an impact on production and therefore on economic returns. In the context of many developing countries, these risks are beyond a farmer's control, and they place farmers in a vulnerable position.

Vulnerability is defined as the likelihood that a risk will result in a significant decline in well-being or lack of resilience against a given form of adversity (OECD, 2009). If a policy objective is to reduce poverty, then it is important to find ways to decrease or contain risks associated with the volatility of production, price and income (Beekman and Meijerink, 2010). Market-based risk management strategies and instruments targeted at farmers can help achieve this.

Market-based risk management instruments for farmers include market infrastructure and institutions such as Warehouse Receipt Systems. Farmers' cooperatives and contract farming mechanisms can also be seen as risk management mechanisms. Other market-based instruments that can stabilize the income of smallholders and reduce their exposure to risk include credit, micro-finance provision, forward and pooling contracts, and insurance products.

2.1. PRIVATE AGRICULTURAL INSURANCE FOR SMALLHOLDERS

The purpose of any insurance is to transfer a specific type of risk from an individual or a group to a third party capable of handling the financial impact of the loss. Agricultural insurance products transfer the residual risks that cannot be mitigated by other risk management strategies such as drought/flood tolerant seeds, appropriate fertilizers, irrigation schemes, market access facilitation or other interventions designed to make farmers more resilient. The insured farmer regularly pays a premium to the insurance company, and when major events such as droughts or floods strike, the insurers are then responsible for the losses according to the terms and conditions of the insurance policy.

Agricultural insurance further builds the resilience of smallholders, in the first instance by providing the safety net of a pay-out in bad years to help ensure household food security and the protection of productive assets. But it does more than that, because it also helps to unlock investment on the part of farmers into new agricultural technologies, inputs and higher-value crops and markets. With access to agricultural insurance, farmers can move into riskier but more lucrative farm activities which have the potential to make a greater positive impact on their livelihoods. This is partly because insurance can open up access to credit and encourage agricultural loans.

Agriculture insurance programs and initiatives have been growing in developing countries, mainly driven by the emergence of index insurance. The pay-out for index-based insurance depends on the value of an index, which might

be based on rainfall, for example. Unlike indemnity-based insurance schemes, it does not rely on measurable losses, which would be a difficult model to apply in the context of rural smallholders. With index insurance, a threshold is set, below which the insurer will compensate the insured.

In India, national index insurance programs have reached over 30 million farmers through a mandatory link with agricultural credit and strong government support. In East Africa (Kenya, Rwanda and Tanzania), the Agriculture and Climate Risk Enterprise (ACRE) has recently scaled to reach nearly 200,000 farmers, bundling index insurance with agricultural credit and farm inputs. ACRE has built on strong partnerships with regional initiatives such as the M-PESA mobile banking service. In Ethiopia and Senegal, the R4 Rural Resilience Initiative has scaled unsubsidized index insurance to more than 20,000 smallholders who were previously considered uninsurable, using insurance as an integral part of a comprehensive risk management portfolio (Greatrex et al., 2015). Some of the insurance schemes that have emerged recently – including Takaful Insurance (see case study 2) – focus on the specific risks faced by certain groups such as pastoralists. Technological advances such as satellite data have helped these products become practical and commercially viable.

2.2. CHALLENGES TO THE SCALABILITY OF PRIVATE AGRICULTURAL INSURANCE

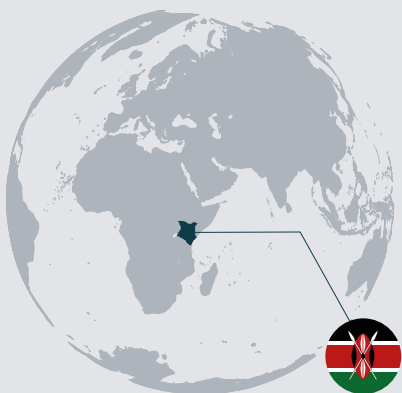
As we have seen, private agricultural insurance is one of the important tools that farmers can use to better manage climate risks along with other agricultural risks. Many developing countries with agriculture-based economies have ambitious plans to move towards being middle-income countries, and this implies a transformation of their agricultural sectors, including access to financial tools such as insurance. But in spite of some of the

**IN ETHIOPIA AND SENEGAL,
THE R4 RURAL RESILIENCE
INITIATIVE HAS SCALED
UNSUBSIDIZED INDEX
INSURANCE TO MORE THAN**

20,000

**SMALLHOLDERS WHO WERE PREVIOUSLY
CONSIDERED UNINSURABLE.**

Greatrex et al., 2015

CASE STUDY 2 | TAKAFUL'S INDEX-BASED LIVESTOCK INSURANCE

Drought is the most pervasive hazard, natural or otherwise, encountered by pastoralist households in arid and semi-arid lands (ASALs) such as the northern regions of Kenya. If there isn't adequate forage for their animals, their lives and livelihoods are in peril.

However, until 2014, the insurance market in Kenya did not offer any cover to meet the risk transfer needs of the large numbers of resource-poor pastoralists located in ASAL regions.

Takaful Insurance of Africa (TIA) was the first company in Africa to bring to market a Sharia-compliant insurance product to pastoralist communities in northern Kenya. It did so through a strategic partnership with the International Livestock Research Institute (ILRI), which led to the development of the Index Based Livestock Takaful (IBLT) product covering four livestock species: camels, cattle, sheep and goats.

ILRI maintains a forage scarcity index based on satellite imagery. The data is collated and indicates which areas have hit the critical drought levels, measured as being below the 20th percentile. At that level, payments are then made to the households, with the amounts varying depending on how bad the drought conditions are. The payments enable the insured to buy fodder and water to sustain animals through the drought, thereby avoiding the deaths or forced sales of the animals, which are pastoralists' main assets.

In March 2014, TIA made its first payouts under IBLT to pastoralists in Wajir County, in the drylands of north-eastern



Kenya, where sheep, goats, cattle and camels had suffered a prolonged drought and loss of forage. More than 45,000 livestock have been insured in northern Kenya, valued at around US\$ 600,000. In recognition of the potential of IBLT to build the resilience of pastoralists, the African Enterprise Challenge Fund (AECF) has invested almost US\$ 1.5 million worth of grants and interest free loans as seed capital to enable the company to extend the reach of the product in Kenya's ASAL regions.

evidence presented above, agricultural insurance remains under-developed in many countries. Only an estimated 500,000 of Nigeria's agricultural producers have access to insurance, in a country with a population of around 190 million where agriculture accounts for about one-third of total employment. The successful scaling up of agricultural insurance in a greater number of developing countries still depends on several challenges being addressed. The major ones are discussed in the following paragraphs.

In many countries, state-owned companies have been the only ones with a mandate to supply agriculture insurance. In Nigeria, the Agricultural Insurance Corporation (NAIC) was the country's *de facto* agricultural insurance monopoly until recently. Rwanda has opened up the agriculture insurance market and the global reinsurance sector was active there until recently, when it exited the market citing low premium volumes and the effect of a 15% withholding tax that makes it difficult to develop a product that offers sufficient coverage at an affordable premium rate.

There is also a capacity gap for insurance professionals. Scarce technical skills include underwriting skills as well as actuarial and cost management skills, as well as product design and delivery. The scarcity of technical skills also affects regulatory authorities and their ability to regulate and supervise the market. Ghana is reported to have only 12 registered actuaries, but the increased interconnectivity between countries and businesses globally through the digital revolution means that the challenges of actuarial and underwriting skills are likely to diminish fast.

The limited availability of good quality agricultural and weather data is, however, likely to remain a challenge for some time when it comes to scaling up agricultural insurance in LMICs. High-quality crop yield data, weather data, and livestock mortality and morbidity data is critical for insurers to be able to design and price insurance products (such as the Takaful product described above) that respond to the needs and financial means of smallholders and other agricultural VC actors.



Land degradation, Mauritania. It is important to maintain vegetative cover to support ecological functions like water flow in rivers

The fragmented nature of smallholder farming in many agriculture-based economies means that for agricultural insurance to reach scale, robust product distribution channels are necessary. There are high costs associated with insurance distribution channels, particularly in rural areas with poor infrastructure. Inclusive distribution models are therefore a key part of the cost-effective delivery of insurance products. With training, Farmer Associations/Organizations and cooperatives could take on this role. Chapter 2 of this book has already described how Farmer Organizations can be strengthened. The increasing reach of mobile-based financial services in developing countries also offers the potential to address the distribution challenge. And as the following section explains, public-private partnerships can be a helpful model for involving other actors and achieving greater scale.

3. PUBLIC-PRIVATE PARTNERSHIPS TO UNLOCK AGRICULTURAL FINANCE

There is a limit to government resources and expertise, just as there is a limit to the reach and capacity of NGOs and private sector organizations. That's why public-private partnerships (PPPs) are increasingly seen as an effective way of pooling resources, reducing risk, improving productivity and driving growth in agriculture. Effective PPPs can deliver coordinated public and private investment with the ability to unlock agricultural growth at scale.

Pillar 4 of the Malabo Declaration of 2014 aims to halve poverty by 2025 through inclusive agricultural growth and transformation, and it specifically anticipates a clear

role for agri-PPPs to contribute towards the achievement of this objective. A similar objective is also included in the Comprehensive Africa Agriculture Development Programme (CAADP) Results Framework 2015-2025.

As already discussed, agriculture remains under-financed due to the high risks associated with the sector. So can PPPs help to get investment underway? Many African countries think so. In this section, we look at two examples: the Nigeria Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) and One Acre Fund.

3.1. THE NIGERIA INCENTIVE-BASED RISK SHARING SYSTEM FOR AGRICULTURAL LENDING (NIRSAL)

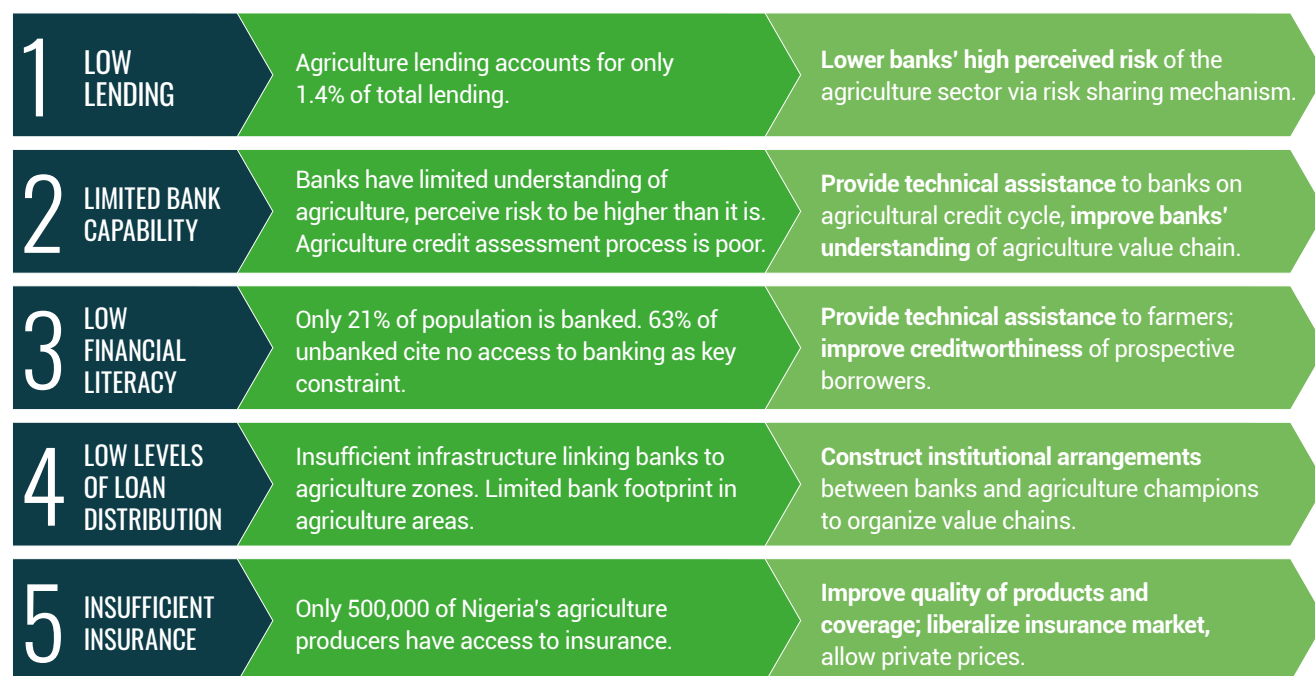
The Nigeria Incentive-Based Risk Sharing system for Agricultural Lending (NIRSAL) was launched in 2011 and incorporated in 2013 by the Central Bank of Nigeria (CBN) as a US\$ 500 million public-private initiative to encourage banks to lend to agricultural VCs by offering them strong incentives and technical assistance. NIRSAL seeks to address the causes of low funding levels in the agriculture sector, including lack of understanding of the sector, perceived high risks, complex credit assessment processes/procedures, and high transaction costs.

NIRSAL's US\$ 500 million operates across five pillars that aim to 'de-risk' agricultural lending and lower the cost of lending for banks. These pillars are: Risk Sharing, Technical Assistance, Insurance, Rating and Incentive Mechanism. Under the Risk Sharing pillar, a US\$ 300 million Credit Guarantee Scheme aims to provide Credit Risk Guarantees (CRG) covering the entirety of agricultural VCs. The aim is to mitigate the risks faced by financial institutions and so incentivize them to lend more to agricultural sector players.

The CRGs themselves work across six categories, each with a specific guarantee on the face value of loans:

- Category 1:** Smallholders and cooperatives, with a CRG of 75%;
- Category 2:** Mechanization, with a CRG of 75%;
- Category 3:** Processors, with a CRG of 50%;
- Category 4:** Integrated commercial farms, with a CRG of 30%;
- Category 5:** Logistics, with a CRG of 30%;
- Category 6:** Agro-dealers and input suppliers, with a CRG of 30%.

NIRSAL's objective was for Category 1 to be the recipient of at least of 50% of the total CRG funds. As of 2019, the main recipients of CRG (over US\$ 200 million, across 650 obligors) sit within Category 4, which also explains the

FIGURE 3 | NIRSAL DE-RISKS THE AGRICULTURAL FINANCING VALUE CHAINS

current 0.01% default rate on loans. Category 4 actors take the lion's share because the issuance of CRG is largely driven by the lending institutions (commercial banks). These banks prefer Category 4 (commercial farmers) as they already have a lower and more easily assessable risk profile. Microfinance institutions that usually work with small-scale farm businesses have yet to be incorporated.

Efforts are underway to remedy the situation so that the portfolio shifts to reflect more Category 1 obligors. These include schemes such as the Interest Drawback Programme from the Central Bank of Nigeria. This programme guarantees a 40% rebate to farmers on the interest component of all loans repaid when due, thus reducing the effective borrowing rate for the farmers. For qualifying smallholders, the interest rebate amount is deposited in the lender's account quarterly.

**NIRSAL WAS LAUNCHED
IN 2011 AND INCORPORATED
IN 2013 BY THE CENTRAL
BANK OF NIGERIA (CBN) AS A**

US\$500 MILLION
PUBLIC-PRIVATE INITIATIVE.

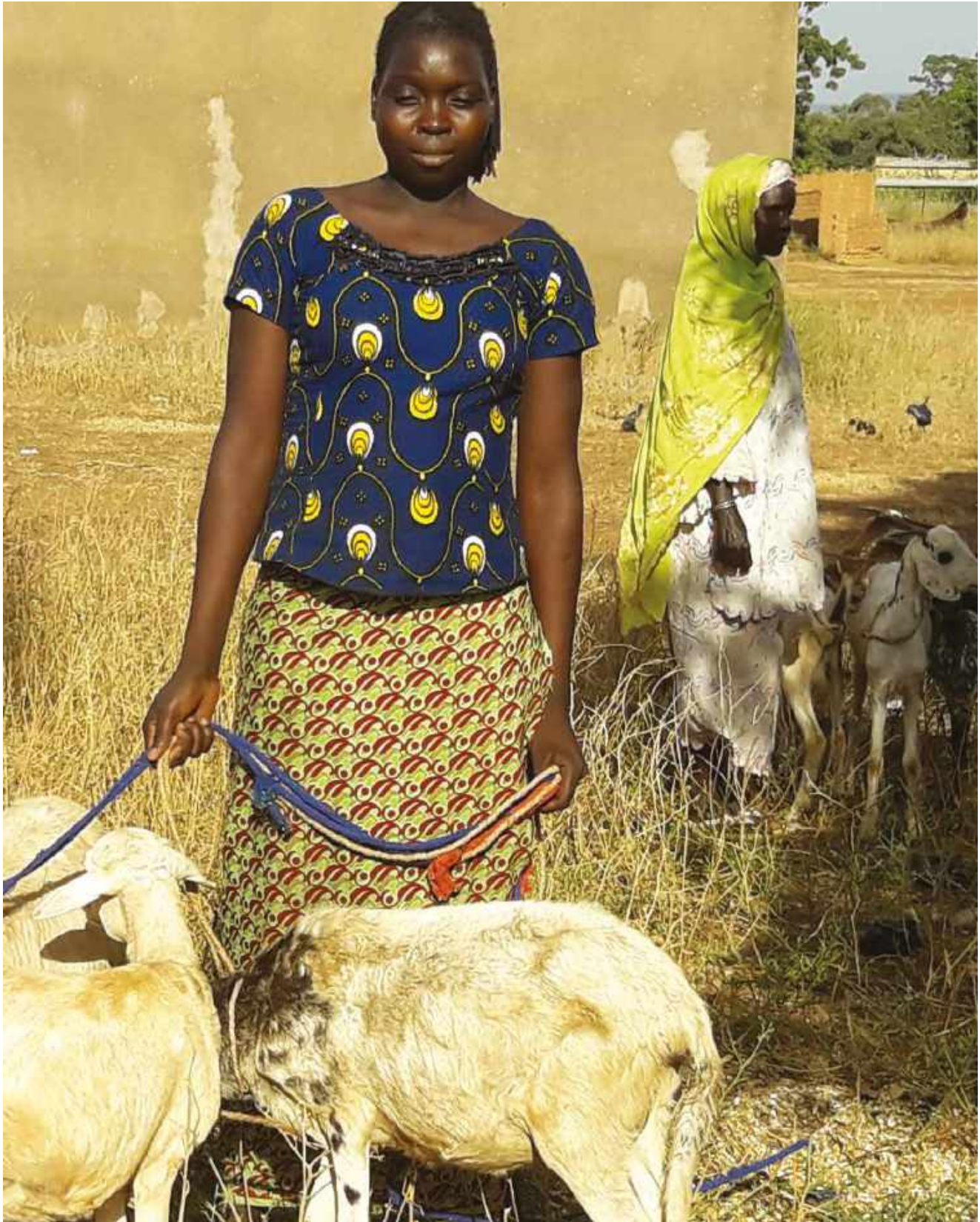


Smallholder, Rwanda

3.2. BUNDLING INSURANCE TO INCREASE UPTAKE: ONE ACRE FUND IN RWANDA

Insurance is a difficult product to provide at scale to smallholders. Distribution is one challenge, and so is demand, as insurance can be a relatively unfamiliar product and one without immediate, obvious payoffs for farmers with limited disposable income. Bundling insurance with other products that smallholders are already familiar with can help solve those challenges.

This has been successfully done in Rwanda, where insurers and reinsurers have found the volumes to be too low to warrant investing resources in market development. Sonarwa, one of the two local insurers which piloted



Smallholder – restocking after 2012 drought, Burkina Faso

agricultural insurance in 2011 exited the market in 2013. Soras, another local insurance provider, remains active in Rwanda but wrote no policies in 2017. UAP Old Mutual entered the market in 2015 and offered agricultural insurance in 2015 and 2016, but also wrote no policies in 2017. In both cases, this was due to the low volume of demand.

One Acre Fund, a not-for-profit organization, has been able to step in to help fill this gap through its model of providing smallholders with a bundle of services to improve their productivity and ability to generate income from their crops. This bundle includes credit for seeds and fertilizers, insurance, technical assistance and market facilitation.

One Acre Fund partners with large-scale actors in both the public and private sectors to deliver these credit, input and insurance products, and to scale up its impact more widely by sharing best practices with those other actors, including the government. For example, it has partnered with two private-sector companies in Rwanda – Agro Processing Industries and Western Seed Company – to begin the production of locally developed hybrid maize seed in Rwanda. One Acre Fund has also participated in agriculture policymaking in Rwanda through its participation in the government's Agriculture Sector Working Group, and has partnered with the Rwandan Ministry of Agriculture (MINAGRI) to provide training and tools for the government's own agriculture extension network. This cooperation leverages the reach of the government to disseminate the best practices identified by One Acre Fund.

The organization now reaches 275,000 farmers in Rwanda, and over the 2012-16 period, it provided over US\$ 15 million in financing. It estimates that its clients increase their productivity by around 30% and incomes by 50% as a result of the program that bundles insurance with input-output markets as well as extension services.

4. BUILDING RESILIENCE TO MITIGATE CLIMATE CHANGE RISKS: INSIGHTS FROM BURKINA FASO AND MALI

As the previous sections have shown, financial instruments play a growing and important role in de-risking agriculture for smallholders, and they can be deployed in various forms at different economic levels. Their potential remains underused in many countries. This could, however, change if insurance programs are considered as part of a basket of measures to de-risk agriculture. Financial products such as insurance should not replace other ways of building resilience or divert attention away from other ways of reducing risks, which might include agricultural adaptation, livelihood diversification or social safety nets.

Climate change poses a significant threat to smallholder livelihoods and to the stability of VCs as a whole. To mitigate that threat, it is critical to build resilience in production systems, and that can be done in many ways. In principle, it requires increasing access to innovations by vulnerable communities to enable them to adapt and reduce losses related to climate change and related events.

To that end, IsDB and other international development institutions invested in a regional initiative from 2012-2017 on 'Building Resilience to Recurring Food Insecurity in the Sahel'. The five-year program covered seven countries: Burkina Faso, Chad, The Gambia, Mali, Mauritania, Niger and Senegal.

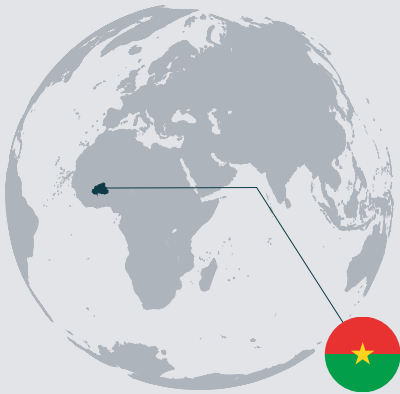
The program took a three-pronged approach to enhancing resilience to climate change. These were:

- Diversifying the production asset base, minimizing the risk of reliance on limited enterprises;
- Increasing the production and productivity of crops (including tree crops), and livestock (including fish) to generate buffers against food insecurity in the event of adversity, and surpluses to generate incomes;
- Strengthening the capacity of national and regional institutions to mainstream resilience and enhance their preparedness to manage food insecurity in the event of droughts.

The latter included several institutional functions: access to remunerative markets by forging strong public-private sector partnerships; the provision of gender-sensitive extension services; improving access to affordable credit; increasing the coverage and condition of rural access roads; and improving weather forecasting in ways that allow better decision making. It also included efforts to enable a policy environment that supports farmers, pastoralists and private sector investments in building resilience.

The following case studies from Burkina Faso and Mali (both IsDB MCs) are success stories of projects within this overall program to create climate resilience for smallholders, highlighting challenges, solutions, and key outcomes. The Burkina Faso case study focuses on resilience in small livestock systems, while the Mali case study focuses on the introduction and scaling up of the Seeds of Hope program.

CASE STUDY 3 | REGENERATING THE SMALL RUMINANT AND FODDER-FEED SYSTEM IN BURKINA FASO



In 2011, the Sahelian region of West Africa experienced a devastating drought. Countries in the region recorded a significant decline in grain production, putting an estimated 13 million people directly at risk of food insecurity. A severe shortage of fodder also led to the early movement of livestock and herders, as well as changes in the livestock corridors used, causing not only losses in livestock but also rising tensions between pastoralists and farming communities.

In coordination with its MCs, IsDB and its technical partners rolled out a regional program designed to achieve a transformative and sustainable impact on the problem of drought causing persistent food insecurity (IsDB, 2018). An important focus of the program was the rehabilitation of the livelihoods of rural populations that had lost their productive assets as a result of recurrent droughts.

Burkina Faso was one of the seven countries that benefited from the program. Here, small ruminants (sheep and goats) were an appropriate entry point for rebuilding the livestock population because of their fast-reproductive ability. Beneficiaries received livestock but there was a requirement that once they reached



A women's farming association with a collective storage facility ('warrantage'), Burkina Faso

ABOUT

11,000

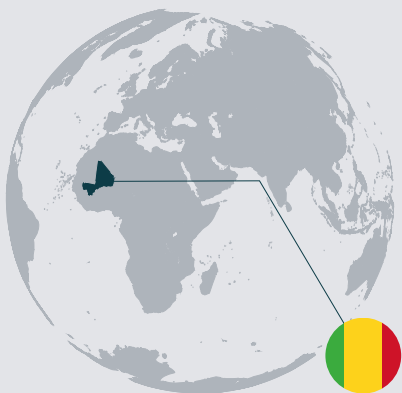
FARMERS HAVE BENEFITED FROM THE PROGRAM, WITH OVER 40% OF THEM BEING WOMEN.

the minimum breeding stock of four heads of small ruminants, they would pass one of those on to the next recipient household in the queue. This strategy relied on farmer solidarity and trust. Although it required close supervision, it was respected by the households because it reflected traditional norms and values. Further supportive measures included upgrading the breeds, health and feed systems. About 11,000 farmers benefited from the program, with over 40% of them being women.

The small ruminant regeneration program was complemented by a fodder and feed program to further build resilience. A reliable supply of fodder and

feed is a major challenge for livestock production among smallholders. Crop residues are commonly used, so the program introduced new varieties of high-yielding cowpea (a drought-tolerant leguminous crop). These varieties provide both a nutritious grain and abundant foliage, making them a good source of feed for livestock. There is also a strong local market for both of these products.

Market access was indeed a key part of building sustainability into the program. For example, Farmer Associations were helped to invest in storage facilities. These facilities enabled farmers to aggregate their produce and market collectively, benefiting from economies of scale. The program also brought in private providers of microfinance to provide credit to the farmers. This helped them access inputs and delay the sale of livestock and cowpeas when prices were low. With higher yields of cowpea and productive livestock, farmers have also been able to diversify their livelihoods by investing in other income-generating activities.

**CASE STUDY 4 | CLIMATE-PROOFING
GROUNDNUT PRODUCTION IN MALI**

Climate change has had a significant impact on yields of groundnut, an important food and cash crop in Mali and many other countries in Africa. It is estimated that droughts have depressed groundnut yields by 38% in recent years. This has frequently led to the exhaustion of local seed stocks, as poor farming families have used the seeds as food. It has also encouraged many farmers to abandon the production of groundnut in favor of crops such as cotton and rice. Growing groundnuts improves soil fertility, and it is traditionally rotated or intercropped with other crops. Its loss has, therefore, led to a degradation of the soils that farmers rely on for the production of other crops.

To address these problems, the Government of Mali partnered with research and development organizations to introduce and scale up the Seeds of Hope program. Launched in 2016 with funding from USAID's Feed the Future Initiative, the program included maize, as this has also been affected by drought. One of the technical partners in the program was the International Center for Research in the Semi-Arid Tropics (ICRISAT) which, together with Mali's National Agricultural Research Institute, had developed a range of high yielding, drought and disease tolerant

crop varieties. These were popular but not getting out to farmers at sufficient scale. A partnership with the Technical Centre for Agricultural and Rural Cooperation (CTA), a joint institution of the Africa, Caribbean and Pacific Group of States (ACP) and the Member States of the European Union (EU), made the difference.

The entry point was relatively simple: seed fairs. These fairs were held in important groundnut production regions of the country, particularly Sikasso and Kaye, and they were designed with various objectives in mind. They raised awareness among farmers of drought-tolerant seeds and spread knowledge of how to adapt to climate change. They also enabled the distribution of small 200g packages of improved seeds to farmers, to create awareness of these alternative seed sources and varieties. The fairs also provided a forum for wider knowledge exchange on seed production systems between researchers, farmers and seed experts and created links between farmers, extension staff, researchers and agro-dealers on sustainable seed systems to support climate resilience for farmers.



Freshly harvested groundnuts, Mali

In addition to seeds, farmers received flyers with basic information on the improved groundnut varieties and brochures on groundnut production and aflatoxin management. The materials were designed to be both a learning aid and a convenient reference source for those involved in the production and consumption of groundnut.

The results of the Seeds of Hope program were phenomenal. Farmers quickly adopted the varieties (90% of those that received the small packets of the drought-tolerant seeds planted them in their fields). Adoption was helped to some extent by the engagement of a local seed company, Faso Kaba. A local NGO, GRAADECOCOM, also played a significant role in popularizing the improved varieties. Farmers planting the improved varieties of groundnut saw a significant increase in their incomes, along with improved health and nutrition outcomes. Local agribusinesses also emerged and developed value-added consumer products. Many jobs were created in the process.

Two important lessons can be drawn from the program. The first is that investment in science, technology and innovations is crucial to developing adaptation measures to de-risk agriculture in the face of climate change. Before the improved varieties were introduced by Seeds of Hope, the groundnut industry was on the verge of collapsing. Secondly, research efforts must go hand-in-hand with distribution and outreach activities. This does not require reinventing the wheel: seed fairs aren't a new idea, but they work. However, scaling up and adapting the innovations to meet the specific needs of farmers and agribusinesses in different regions requires bringing on board a wide range of stakeholders, including the private sector. As this program showed, seed fairs can be an effective platform to kickstart engagement.

5. LESSONS LEARNED

- Pilot initiatives in agriculture insurance have demonstrated its potential to unlock greater investment in the agricultural sector. Scaling up the reach of agricultural insurance products requires inclusive and robust distribution channels, as well as capacity building in the insurance industry.
- Given the increased frequency and magnitude of extreme weather events, disaster-prone countries can benefit from adopting sovereign disaster risk insurance mechanisms to quickly avail themselves of technical and financial resources when necessary. This is a relatively new mechanism, so the challenge for many countries is the political will to allocate insurance premiums from national budgets, particularly where there is a lack of an insurance culture and there are other conflicting development priorities.
- Specialist index-based insurance products aimed at smallholders or pastoralists, such as Takaful Insurance, are well placed to reduce drought risks in arid and semi-arid regions. However, it is important to have mechanisms to ensure that the payouts received do maintain pastoralist livestock.
- Bundling insurance with other inputs such as credit, seeds, fertilizer and training is an effective way of distributing a varied package of risk-mitigating measures to smallholders. Scaling this up will require buy-in from more public and private sector actors. Development financing institutions such as IsDB are indispensable in providing financial resources and leadership to support integrated and sustainable agricultural resilience programs, but partnering with the relevant technical development partners is critical to ensure impact.

6. CONCLUSION

Low levels of climate resilience and a lack of appropriate risk management mechanisms traps smallholders in low-risk, low-return economic activity. De-risking agriculture must be a development priority so that smallholders have the confidence and ability to invest in their productivity and add to the sustainability of VCs.

This chapter has examined how various forms of insurance have a role to play in disrupting the vicious cycle described above. Scaling these interventions up successfully in agriculture-based developing countries is a challenge and involves addressing a number of obstacles including access to high-quality agricultural and weather data, limited technical capacity, low premium volumes, and uncondusive policy environments. It is also crucial that policymakers take a broad view of risk and address other fundamentals such as agricultural adaptation and livelihood diversification, rather than viewing financial mechanisms as a silver bullet. As some of the case studies have shown, well-structured interventions that take this into account have the potential to deliver transformative change.



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CHAPTER 6

FINANCING SMALLHOLDER- LED INCLUSIVE AGRICULTURAL VALUE CHAINS

RURAL
DEVELOPMENT

MICROFINANCE

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VALUE CHAINS

AGRICULTURE

ISLAMIC
FINANCING

KEY MESSAGES

- ◆ Private sector engagement through an integrated agricultural value chain (VC) approach has significant potential to enhance access to Islamic financing, generate jobs and economically empower smallholders, including young farmers and women.
- ◆ IsDB's financing of the agriculture and rural development (ARD) sector of its member countries (MCs) stood at US\$ 7.5 billion by the end of 2018. Islamic financing products, particularly Salam and Murabahah, can be used as part of contract farming arrangements for the sustainable inclusion of smallholders into VCs.
- ◆ Islamic financing is in its early stages of development in many MCs. The public sector can facilitate its rapid growth, especially in rural areas, through public finance programs, including but not limited to microfinance. These programs must be underpinned by institutional capacity development, awareness creation and policy support.

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CHAPTER 6 FINANCING SMALLHOLDER-LED INCLUSIVE AGRICULTURAL VALUE CHAINS

INTRODUCTION

Achieving the SDGs by 2030 requires the scaling up of financing to all sectors of economic development. Islamic financing has tremendous potential to meet the needs of many countries and its application is rapidly gaining traction. As an asset-based system, it links finance with the real economy and operates in a fair and transparent manner. Islamic financing can therefore be usefully deployed in the agriculture and rural development (ARD) sector in ways that trigger a multiplier effect on economic growth that both includes and transcends rural areas. This is particularly the case when a value chain (VC) approach is deployed, given its potential to bring on board stakeholders with capacity and the ability to drive efficient, competitive processes. However, in many countries farmers and other private sector actors along the VC would benefit from greater public sector investments to address the major challenges that limit the ability of VCs to achieve scale and inclusivity.

This is why IsDB is dedicated to facilitating the financing of projects related to the ARD sector of its MCs. Many of our MCs (26 out of 57) are classified as least developed countries (LDCs), and agriculture forms a vital part of their economies. Even in middle-income and high-income MCs, food security remains a challenge, which is why financing this sector remains a priority.

When deployed effectively, public financing can play a critical leveraging role. This chapter highlights the growth of IsDB's investments over time, with significant leaps taking place after the 2008 global food crisis. It also highlights the regional differences between the investments that have been made to support MCs as part of their commitment to achieving the Sustainable Development Goals (SDGs).

However, the ARD sector requires more than public investments. The private sector can play a significant role if key constraints are addressed, including weak infrastructure and policy disincentives. Financing needs can also be addressed, in part, by co-locating investments with other development partners to create synergies and minimize duplication. This is best done with programs that engage the private sector as they can also contribute to the financing required.

Private sector engagement is in line with IsDB's 'Making Markets Work for Development' model for MCs, which is based on driving development through the competitiveness of industries, including agribusinesses connected to global markets (IsDB, 2018b). But nurturing effective private sector engagement does require the provision of conducive policies and capacity development support.

This is critical if we are to expand the deployment and adaptation of the various Islamic financing tools available to us, either to address working capital limitations or to build agribusinesses' assets.

Section 1 of this chapter provides a brief description of the main Islamic financing tools deployed by IsDB and its partners in various programs. Section 2 gives an overview of IsDB's ARD financing activities, and this is followed in section 3 by case studies that demonstrate some of the approaches that could be used to adapt Islamic financing tools within the framework of publicly financed projects to develop ARD sectors. In section 4 we look at the application of Islamic financing modes within the framework of contract farming, and outline the legal aspects of the modes used relative to conventional financing systems. The chapter ends with lessons from these case studies and some concluding remarks.

1. MODES OF ISLAMIC FINANCING

Islamic financing instruments are generally classified into two categories: sale and partnership instruments. The former generate debt, whereas the latter are equity modes of financing. The following subsections present the key features of each of these two instruments and the specific agricultural needs that each can finance.

All of the Islamic finance instruments listed in Table 1 are relevant for financing agricultural activities. However, out of all of these, the Salam contract is the closest equivalent to a conventional agricultural production contract in the sense that both are used to acquire agricultural goods to be delivered in the future.

IsDB has deployed these Islamic finance instruments to provide development assistance to its MCs and to communities in non-MCs. The essence of Islamic finance is to share the risks with the beneficiaries and to deliver high-quality, operational assets that can function efficiently and sustainably to achieve their purpose. These products

MANY OF OUR MCs

(26 out of 57)

ARE CLASSIFIED AS LEAST DEVELOPED COUNTRIES (LDCs), AND AGRICULTURE FORMS A VITAL PART OF THEIR ECONOMIES.

TABLE 1 | INSTRUMENTS FOR WORKING CAPITAL (EXCLUDING RISK-SHARING MODES)

Instrument	Characteristics	Usefulness to farmers
Salam	Form of sale where the owner of goods to be delivered in the future undertakes to sell the same to a buyer against full payment of the sale price in advance (before delivery).	Can address working capital requirements of farmers, including running and maintenance costs and charges.
Murabahah	Form of sale where the owner of goods agrees to sell the same to a buyer (at cost + profit) with full disclosure of the costs of the goods. The goods must already exist and be in the possession of the seller. Payment of the sale price can be on a cash or deferred basis.	Enables farmers to acquire goods or assets needed for undertaking their productive activities.
Musawamah	Same as Murabahah, except that the seller is not obliged to disclose the costs incurred for the acquisition of the goods/assets sold.	Enables farmers to acquire goods or assets for which the cost is difficult to determine.
Muzara'a	Form of partnership (sharecropping) where one party presents land to another party for cultivation and maintenance in exchange for a commonly defined share in the crop.	Enables farmers who do not have land to still undertake various types of productive agricultural activities.
Restricted Mudaraba	Profit-sharing loss-bearing arrangement for business financing with restricted terms and conditions.	Like Diminishing Musharaka (see below) this can be used for most financing needs. It is an arrangement in which one party (Rabbulmal) supplies the capital and another (Mudarib) manages the investment with the profit shared in an agreed manner.

TABLE 2 | TERM FINANCING INSTRUMENTS

Instrument	Characteristics	Usefulness to farmers
Ijarah	A contract where an owner of goods/assets agrees, as lessor, to lease the same to another party against payment of rental.	Enables farmers to rent rather than purchase goods/ assets they need for their agricultural activities, especially if what they need is long-term financing.
Service Ijarah	A contract where one party, acting as service provider, undertakes at the request of the other party to sell certain services to that party in exchange for payment of a sale price.	Enables farmers to sell their expertise/services to market players who lack expertise or infrastructure for producing agricultural goods.
Istisna'a	Form of contract where one party commissions another party to procure the construction of certain physical assets subject to the right of the second party to purchase the same assets against payment of a sale price.	Enables farmers to acquire physical assets while benefiting from long-term financing.
Diminishing Musharaka	A variant of Musharaka where one partner purchases the other partner's share in the venture/partnership established.	Enables farmers to own an asset for which they cannot afford to pay the full price. While the asset acquisition is initially based on a joint venture, a farmer ends up owning the assets in full by purchasing the shares of the other partner over a period of time.

Source: IsDB, 2014

are not readily available in the market, so the seller (in this case IsDB) needs to ensure that the design and specifications avoid 'gharar' (uncertainty). The Istisna'a instalment sale finance mode has been used extensively by IsDB to finance agriculture infrastructure operations in MCs, including water assets for agriculture purposes.

The Salam financing approach is used widely by Islamic microfinance institutions for various small businesses, including smallholders. A few case studies are highlighted in *Change for Impact* (IsDB, 2018a).

2. IsDB FINANCING FOR AGRICULTURE IN MCs

IsDB's involvement in facilitating the financing of the agriculture sector dates back to the very early days of the institution, with the first projects being approved in 1977, the second year of the bank's operation. By the end of 2019, IsDB had approved a total of US\$ 15,702.86 million worth of projects in this sector, equivalent to 12% of the total approvals made by the bank since its inception.

IsDB's interventions have included both project-level financing and capacity development activities for the agriculture sector.

As Figure 1 illustrates, the bulk of approvals for the agriculture sector have occurred between 2010 and 2019. This is due to the bank's increased focus on agriculture following the global food security crisis of 2008. In fact, post-2008 approvals account for over 75% of total investments in the ARD sector.

As part of its response to the 2008 crisis, IsDB launched the Jeddah Declaration Special Program for Agriculture, which had a total financing window of US\$ 2.5 billion for agricultural projects. There is growing evidence (though still limited) that projects under this program have had significant impacts in developing the ARD sector in MCs (IsDB, 2015).

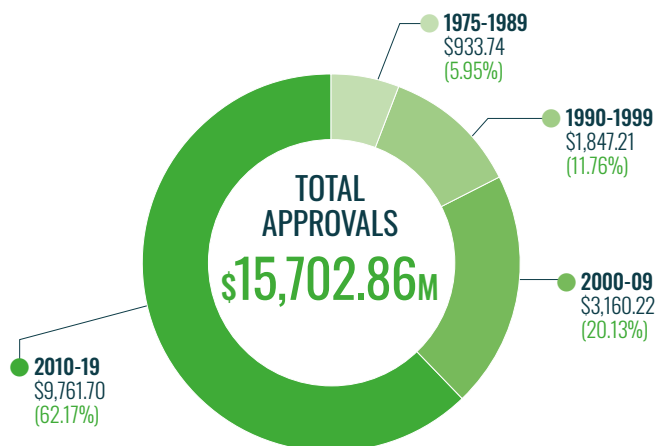
The Jeddah Declaration Special Program for Agriculture

offered a package of investments to member countries (MCs) for agriculture, including grants, IsDB financing under special concessionary terms, financing for the private sector, trade financing and guarantee-based financing. The objective of the program was to improve food security in MCs, and to make them more resilient to the shocks witnessed during 2008 crisis. The program operated for a period of three years from 2008 to 2010.

Many of IsDB's MCs are subject to climate stresses and have limited access to suitable water sources. Agriculture in most of these countries is rain-fed and therefore exposed to the risk of crop failure in the event of sub-optimal rainfall or droughts. Many dryland regions suffer from water stress and have access only to poor quality water for agriculture. This includes high salinity water that requires costly desalination to be of use for crop production.

To address this challenge, in 1999 the bank established the International Center for Biosaline Agriculture (ICBA) in partnership with the Government of the United Arab Emirates. The ICBA is one element of IsDB's capacity development work for the agriculture sector.

FIGURE 1 | IsDB'S PAST APPROVALS FOR AGRICULTURAL SPEND (US\$, MILLIONS)



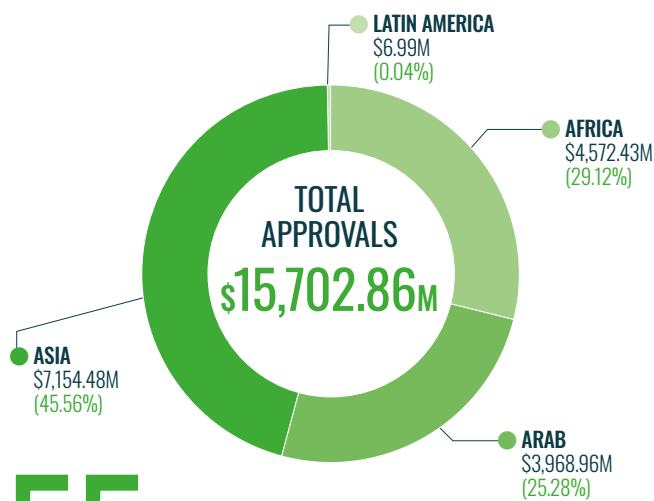
The **International Center for Biosaline Agriculture (ICBA)** is an international not-for-profit research institute established by IsDB, the Organization of the Petroleum Exporting Countries (OPEC) Fund, the Arab Fund for Economic and Social Development (AFESD), and the Government of the United Arab Emirates (UAE), for conducting agricultural research with a unique focus on marginal environments. The center aims to identify crops and technologies best suited for regions affected by salinity, water scarcity and droughts. Since the establishment of the center in 1999, IsDB has continued to support its activities and tries to incorporate its research into the projects financed by it. More information on ICBA can be found at www.biosaline.org/

2.1 GEOGRAPHICAL SPREAD OF IsDB FINANCING

Agricultural financing has been provided to 55 MCs, and the bulk of these approvals (40%) was for the Asia and Latin America Region, followed by Africa (35%) and the Arab region (25%). Figure 2 illustrates the geographical spread of the approvals.

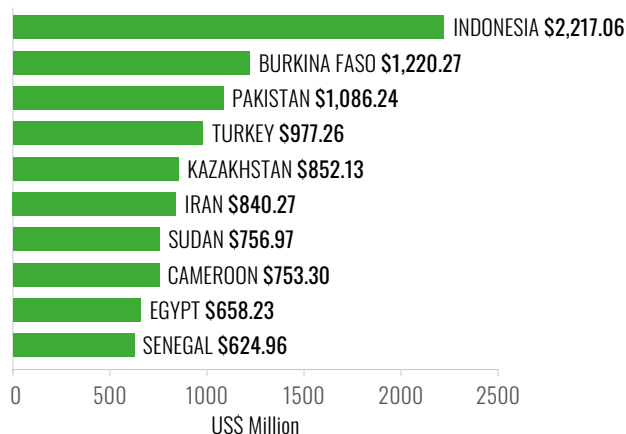
Figure 3 breaks this down further and shows that Indonesia leads the way in terms of financing from the bank for its agriculture sector, followed by Iran and Uzbekistan. The top 10 countries account for 59% of financial approvals for this sector. Out of all the approvals made, 65% of projects worth over US\$ 2.5 billion have been completed. At present, 25% of projects worth over US\$ 4 billion are in various stages of implementation. Islamic microfinancing

FIGURE 2 | GEOGRAPHICAL SPREAD



55
COUNTRIES HAVE BEEN FINANCED

FIGURE 3 | TOP 10 BENEFICIARIES OF ISDB'S FINANCING (US\$, MILLIONS) OF AGRICULTURE AND RURAL DEVELOPMENT AMONG MEMBER COUNTRIES



POST-2000 APPROVALS ACCOUNT FOR OVER

75%
OF TOTAL APPROVALS FOR AGRICULTURE

has been included in most of the integrated projects developed since 2008. About 12% of projects have been cancelled after approval for various reasons, including political conflicts in some MCs.

2.2 PROGRESS AGAINST THE SDG TARGETS

Taken together, IsDB's investments have contributed significantly to developing the ARD sector in MCs. Table 3 below provides an indication of achievements against the core indicator of SDG2 (Zero Hunger by 2030). The outputs from investments made have provided a sound base for developing strong VCs. For example, rural storage facilities have helped communities to safely store produce in bulk and minimize post-harvest losses, while also reducing transaction costs when selling to private sector buyers.

Public investments in increasing and improving irrigation systems have also raised productivity and generated marketable surpluses in MCs (IsDB, 2015). Microfinance facilities embedded within several projects have enabled some countries to roll out programs providing access to such facilities to smallholders and youth groups. One good example of this is in Sudan, where the Bank of Khartoum was contracted to manage an IsDB-financed project to structure and administer a microfinance program. The investments made by both the farmers and young people in peri-urban horticultural VCs (some deploying greenhouse technologies) have generated significant employment opportunities and income for many participants.

TABLE 3 | INDICATIVE OUTPUTS OF ISDB-FINANCED PROJECTS

SDG NUMBER	SDG	INDICATOR	PLANNED TARGET	ACTUAL
2	ZERO HUNGER	Agricultural storage capacity built or upgraded (tons)	463,500	441,500
		Area irrigated (hectares)	8,572,914	1,477,577
		Crop production increase (tons)	6,215,177	5,828,024
		Crop yield increase (tons/hectare)	1-3	2-3
		Livestock (Dairy) production increased (tons)	20,130	3,730
		Livestock (Meat) Production increased (tons)	47,575	23,241
		Water resources developed from multiple use (m3)	901,743	1,811

Note: Data in Table 3 is based on 140 projects completed from 1980 to 2019 across 35 member countries (Source: IsDB project database).

Islamic microfinance is integrated in most IsDB ARD projects, especially those developed after the 2008 global food crisis. This is based on a recognition that the major constraint faced by smallholders is a lack of financing, which limits the ability of farmers to improve their practices and engage in VCs meaningfully. A recent evaluation (IsDB, 2017) of IsDB's microfinance support interventions has generated important lessons (see Box 1). These lessons from four country projects (Bangladesh, Burkina Faso, The Gambia, and Senegal) are informing the development of subsequent projects, and the next section provides some perspectives on this.

BOX 1 | LESSONS FROM MICROFINANCE SUPPORT PROGRAM

- Islamic finance principles make financing more attractive to potential clients.
- The success of microcredit schemes to the poor depends on gradual increases of financing amounts and timeliness of disbursement, especially when the average loan size is small.
- Flexible repayment structures and increased financial awareness boost financial inclusion.
- A legislative framework on Islamic finance needs to be in place before commencement of microfinance projects to ensure compliance with Islamic finance principles.
- Building capacity of microfinance institutions should support the drafting of standard legal financing agreements in line with the principles of Islamic finance.

THE KIGARAMA FARMERS
SACCO IS OWNED BY

2,901 members

WITH SHARE CAPITAL
CONTRIBUTIONS OF

US\$ 172,800

3. PUBLIC-PRIVATE PARTNERSHIPS FOR ACCESS TO FINANCE: THREE CASE STUDIES

UGANDA: LEVERAGING LOCAL INSTITUTIONS TO SCALE UP ISLAMIC FINANCING

In 2009, the Government of Uganda received a loan of US\$ 10 million from IsDB to finance the Rural Income and Employment Enhancement Project (RIEEP). The project – implemented by the Microfinance Support Center (MSC), a quasi-government institution – operated nationwide and aimed to support rural populations by facilitating access to affordable, sustainable and convenient financial and business development services. The funding included a US\$ 300,000 grant for capacity development and technical support for communities and agribusinesses in targeted VCs.

Although several modes of financing were initially rolled out, the Murabahah and Mudarabah modes of financing became the most widely used. The project successfully financed 101 Shari'ah-compliant initiatives through 74 client institutions including cooperatives, unions, SMEs and MFIs. One of them was the Kigarama Farmers Savings and Credit Cooperative Organization (a type of entity known as a SACCO) located in the Sheema district of Western Uganda. This particular SACCO is owned by 2,901 members, with share capital contributions of US\$ 172,800.

Following a detailed feasibility assessment, the Kigarama Farmers SACCO received US\$ 140,000 as microfinance support for members to purchase inputs and equipment and build agricultural assets. This financing was structured as an unrestricted Mudarabah contract, because the funds were intended for onward financing to the group's 2,901 members to use for agriculture and other commercial Shari'ah-compliant projects. The SACCO itself lends to its members through Mudarabah, Murabahah and Salam modes.

One of the SACCO's member farmers who accessed microfinance through the project used the funds to invest in calf fattening, irrigation and a biogas facility. This innovative, integrated farming business went on to be used by the SACCO as a demonstration site for its other members.

IsDB's financing of RIEEP established a solid foundation for the Islamic microfinance industry in Uganda and has stimulated demand for its products. However, there have also been challenges in implementation, mainly in terms of knowledge and skills development, client/partner and project selection, compliance with Shari'ah rules and procedures, and reporting systems.



Smallholder dairy production made possible by Islamic micro-financing project in Uganda

Two important lessons were learnt from this project:

- i) Quasi-national institutions like MSC can play an effective role in poverty reduction by promoting participatory financing in remote regions. MSC established strong relationship with SACCOs and SMEs as a mechanism for the promotion of the participatory financing. MSC's capacity to support and scale up inclusive development is appealing to many multilateral development institutions such as IsDB, the World Bank and AfDB.
- ii) Some of the financing modalities, particularly Murabahah (purchase and resale plus profit margin), and Salam (forward crop-financing) are considered unsuitable by many for microfinancing, as they are relatively expensive and tied to the production cycle. However, MSC succeeded in developing appropriate and diverse instruments to provide its SACCO and SME clients with access to investment funds, which did include Murabahah and Salam modes of financing. This shows the importance of adapting the financing products to the specific conditions of the target commodities and their VCs.

EGYPT: CAPACITY BUILDING IN THE SMALLHOLDER LIVESTOCK SECTOR

In 2013, IsDB launched an Islamic financing project with the Government of Egypt for a Youth Employment Support Program (known as the YES Program). Delivered by Egypt's Micro, Small and Medium Enterprise Development Agency (MSMEDA), the project aims to provide young people and low-income producers with technical assistance as well as financial and non-financial services to help them set up income-generating activities using Shari'ah-compliant mechanisms. The financing mode applied was a Restricted Modarabah Agreement of US\$ 50 million.

The livestock sector was a useful entry point to kickstart the program. The lead partner company selected was Ard El Kheir (AEK), established in 2009, which is a major player in Egypt's dairy and meat VCs. AEK has developed an effective mechanism for improving the Egyptian buffalo breed through improved artificial insemination and the adoption of best practices. It has also established an academy to share its expertise in calf fattening and milk and meat production with small-scale livestock producers.

Since the launch of the program, there have been three rounds of financing with 150 young farmers selected per round, out of around 2,000 candidates. MSMEDA and AEK have managed this jointly, with MSMEDA focusing on the legal/financial aspects and AEK engaging directly with the beneficiaries to assess their technical capabilities and to select the best candidates, who are then provided with 20 heads of cattle from Brazil and can take part in the training program.

A loan of US\$ 30,000 for each beneficiary is intended to help them finance production costs, such as animal feed and veterinary services. This totals US\$ 4.2 million per round, with the loans subject to a 5% mark-up using the Murabahah model. The financing is channelled directly from MSMEDA to AEK, and AEK procures the cattle. (See Figure 4 for a graphical representation of the relationship between MSMEDA, AEK and the beneficiaries.) After the cattle have been quarantined, the beneficiaries begin their training program in which they are responsible for their calves.

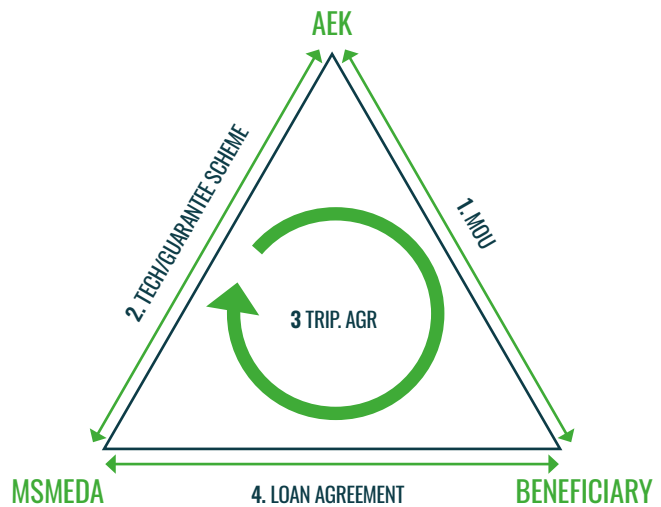
AEK provides the technical expertise on nutrition, sanitation and veterinary techniques, and in return the beneficiaries work in AEK's facility for 12 hours per week over six months. They acquire solid technical expertise, which they can then go on to put into practice themselves. At the end of the training program, AEK sells the calves and distributes the residual income to the beneficiaries after reimbursing the MSMEDA loan. The amount that is left varies depending on market prices, but on average it is between US\$ 620 and US\$ 1,500. This is given back to the beneficiaries. Overall, the contractual arrangement provides the young farmers with an adequate rate of return in a low-risk environment, coupled with technical expertise and certification.

TUNISIA: INVESTING IN SMALL-SCALE DAIRY PRODUCERS

In 2015, IsDB and Tunisia's Zitouna Bank established 'Zitouna Tamkeen' (ZTM) as an Economic Empowerment (EE) institution targeting young people and disadvantaged populations. It is the first institution in Tunisia and the Maghreb region to use Islamic financial tools specifically for the economic integration of marginalized communities. It does this by identifying VCs that have untapped potential for stimulating entrepreneurship and employment, and therefore for delivering a significant socio-economic impact. ZTM covers all productive sectors, but has a significant focus on agriculture. It is currently engaged in more than 20 EE projects targeting thousands of small producers in specific regions of Tunisia.

Hlib El Khir ('Milk for Good') was ZTM's first EE project in the dairy VC, and was based on a partnership with Délice Holding (DH). DH is a market leader in the dairy VC

FIGURE 4 | IMPLEMENTATION FRAMEWORK OF ARD EL KHEIR FOR THE YES PROGRAM



in Tunisia, with more than 65% of market share. As the off-taker in this project, it strengthened the production capacity of 5,500 farmers in the north-western region of Tunisia, over a five-year period. The project mainly targeted small-scale dairy farmers and unemployed higher education graduates, through training workshops in dairy farm management and the provision of Islamic finance instruments for investment in cattle, milking machines, milk cooling mini-tanks, stables and so on.

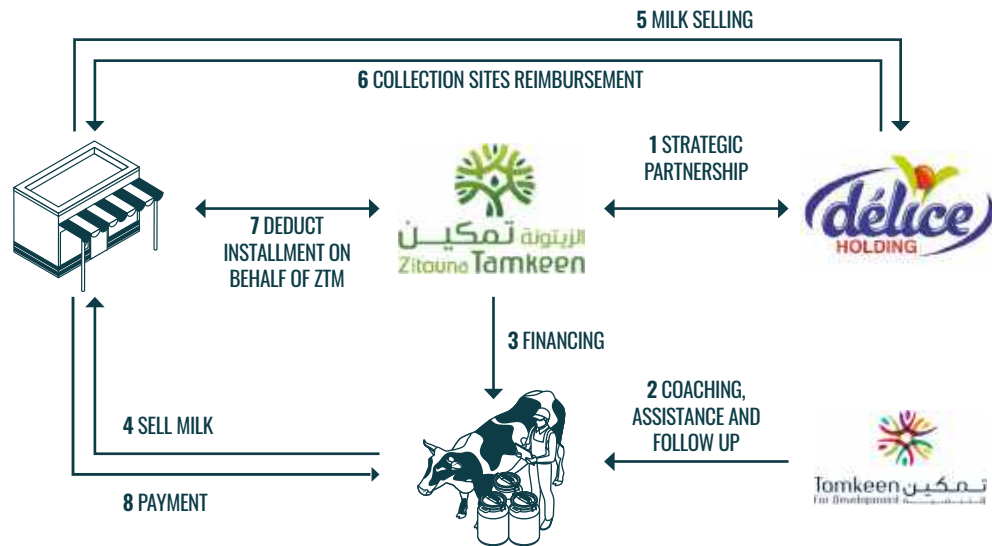
Following a communication campaign, ZTM selected beneficiaries based on specific criteria and advanced them to the funding stage. Farmers were able to start milk production as soon as they received heifers and production equipment, which were made available at a reduced price. Milk was supplied to local collection centers, from where it was transported to DH. Every month, DH paid the collection centers an amount corresponding to the quantity received, including a premium negotiated by ZT for the benefit of the participating farmers. The collection center reimbursed

SINCE THE LAUNCH OF THE YES PROGRAM

150 young farmers

HAVE BEEN SELECTED PER ROUND, OUT OF AROUND 2000 CANDIDATES

FIGURE 5 | THE 'MILK FOR GOOD' BUSINESS MODEL



farmers after deducting a monthly repayment, which went directly back to ZTM. This minimized ZTM's operational costs and secured a constant flow of milk to Délice. For the farmers, the benefit was that they had an assured off-taker for a period of five years, as well as three years of close monitoring and access to technical training.

The project made a significant impact on the livelihoods of participating small-scale milk producers in the north-western region of Tunisia. Farmers tripled the size of their herds, and saw their monthly income increase by 200%. The success of the Hlib El Khir project shows that a combination of appropriate financing, training, constant monitoring, guaranteed off-take (as well as protection through an insurance scheme covering herd mortality) can be transformational to the livelihoods of marginalized farmers. Crucially, it is a scalable model with the potential to impact 125,000 farmers across Tunisia, strengthening the dairy VC as a whole.

4. CONTRACT FARMING (CF): MAKING IT INCLUSIVE THROUGH ISLAMIC FINANCING

4.1 THE CF PROCESS

Including smallholders in functional VCs is important both for the sake of system efficiency and as a pathway to improving the income and welfare of rural populations in developing countries (Da Silva and Rankin, 2013). It is also an essential component of achieving the SDGs, particularly SDG2. This is why effective institutional mechanisms to enhance the participation of smallholders

in modern markets are at the forefront of IsDB's agenda for agricultural growth in its MCs.

One such model is CF. This has enormous potential to deliver strong inclusive benefits to smallholders, although there are regional disparities (Jama and Pizzaro, 2008). Chapter 3 of this book provides a fairly comprehensive assessment of the advantages and disadvantages of CF, including its growing resurgence among development institutions. A number of current global trends have the potential to further drive the expansion of CF (Jia and Bijman, 2013). One of these is the rise of supermarkets in food retailing, particularly in rapidly urbanizing economies. Another is the reduced role of the state in many countries in agricultural production and marketing, alongside greater private sector engagement. However, there has been relatively little exploration of the prospects of Islamic financing in addressing some of the challenges associated with conventional contracts in CF.

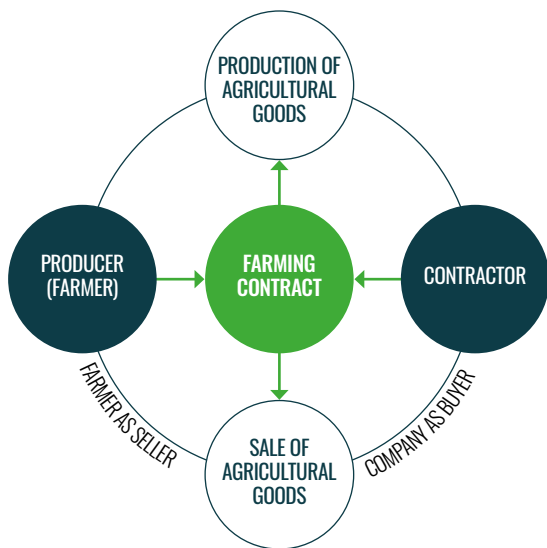
CF has been broadly understood to include various types of agriculture-based contractual relationships. However, it is most commonly applied to agricultural production contracts (APCs), where a producer (the farmer) agrees to produce a quantity of agricultural goods, generally for future delivery, in accordance with certain qualitative and quantitative specifications set by the contractor (the buyer), at a specified price. For simplicity, the notion of CF is restricted here to APCs only due to their direct relevance to Target 2.3 of SDG2.

The YES Program has issued financing for 150 young Egyptian farmers, providing selected candidates with 20 head of cattle each to rear.



The following simplified diagram (Figure 6) explains how the mechanism of CF works in practice.

FIGURE 6 | CONTRACT FARMING MODEL



4.2 CF APPLICATION: THE ‘HLIB EL KHIR’ PROJECT

The objective of implementing agricultural contract arrangements in the ‘Hlib El Khir’ project (described above in section 3) was to govern the relationship between the main actors in the dairy VC, namely Zitouna Tamkeen (ZTM), Delice Holding (DH), the milk collection center and small-scale dairy producers.

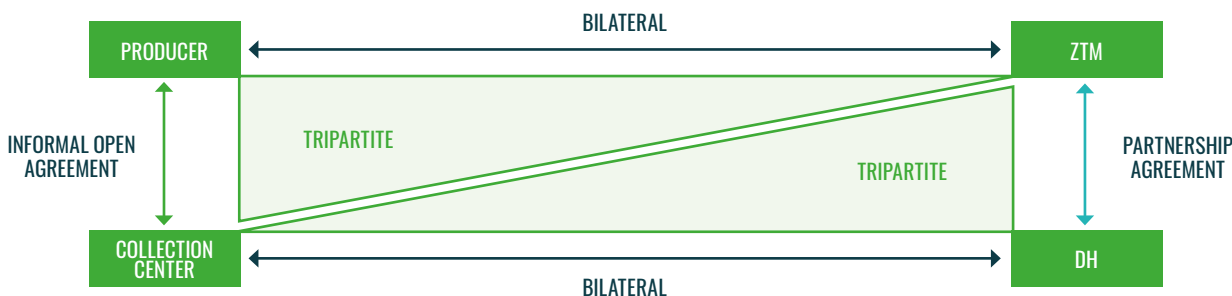
One way to minimize overall project risk is to engage with the main stakeholders from the beginning of the project and adopt a collaborative approach to bring together the different points of views when establishing the rights and obligations of each party. It is essential that all entities involved in such a project work in perfect symbiosis, given the enormous amount of information to seek, process and share.

Furthermore, synergy must materialize internally by involving the relevant departments of the financial institution at the right time. The Legal Department of ZTM, for example, played a major role in the design and implementation of the Hlib El Khir project. In fact, the project was only made possible as a result of the department’s involvement from the start, during the design phase, and its in-depth understanding of the technical and operational aspects of the project. Contracts should therefore reflect this understanding. Moreover, maintaining a relationship of trust with the economic partners was critical in this project, and made the implementation of contracts possible. The model for this exercise is summarized in Figure 7.

With four main players in the dairy VC, one way to reach an agreement between all of these parties is to produce a combination of bilateral contracts and sign them in pairs. However, this would fragment the relationship between the different actors and dilute accountability, and its implementation would be challenging. The solution that was adopted by consensus was to produce a tripartite contract between the small-scale dairy producers, the milk collection center and ZTM on the one hand, a tripartite contract between DH, the milk collection center and ZTM on the other hand, and also a bilateral contract between DH and the milk collection center.

Each contract was specific to the nature of the commercial transactions taking place between the signing parties. For example, the bilateral contract between ZTM and the small-scale dairy producer included the producer’s agreement to pay the financing received from ZTM to the milk collection center for the purchase of pregnant heifers. Also, through this contract, the producer delegated the milk collection center to pay to ZTM the amount of the monthly instalment directly from the milk produced.

FIGURE 7 | CONTRACTUAL FARMING MODEL FOR THE ‘HLIB EL KHIR’ PROJECT



In the case of the bilateral agreement between DH and the milk collection center, a provision was included allowing it to deduct from the milk collection center the amounts of the instalments due to ZTM in the event of non-payment as a form of guarantee. This mechanism greatly minimized the operational and financial risk of the project as the milk collection center undertook extra efforts to choose the most suitable beneficiaries. In fact, the milk collection center generated an additional and very attractive profit margin within the framework of this project through the increased flow of quality milk. Thus, it was suitable for the milk collection center, for its part, to absorb a larger part of the risk.

4.3 CF AND ISLAMIC FINANCING: THE CASE OF SALAM FINANCING

All of the Islamic finance instruments described in the introduction of this chapter are relevant to financing agricultural activities. However, out of all of them, the Salam contract is the closest equivalent of the conventional agricultural production contract in the sense that both instruments are used to acquire agricultural goods to be delivered in the future.

One fundamental difference between conventional APCs and Salam farming contracts, however, lies in the timing of payment for the goods by the contractor (buyer). For the former, the buyer is required to pay the sale price after delivery of the goods, whereas for the latter a fundamental condition for the validity of the contract is that the buyer has to pay the sale price to the producer upfront (spot payment), upon signing the contract. The mere fact that the buyer has to make an upfront payment makes Salam contract farming a very appealing instrument for farmers seeking working capital.

Payment risk is completely mitigated under Salam CF. The producer/seller is not exposed to the potential insolvency of the contractor/buyer, unlike conventional APCs where this circumstance can materialize between the date of the contract and the date of the delivery.

The payment timing under Salam CF also influences the performance/production risk. As it is not mandatory under conventional APCs that the contractor makes upfront payment of the price of the goods, the production risk (i.e. the risk of loss or shortfall) lies in theory with the farmer, although in certain cases the law applicable to the contract may expressly place the risk on the party holding the title/ownership of the goods.

Under Salam CF, the pricing cannot be left open, nor can there be possible variations to the pricing terms. The price has to be paid on the spot. How, then, can both parties

“ All of the Islamic finance instruments described in the introduction of this chapter are relevant to financing agricultural activities. ”

mitigate the pricing risk mentioned above? In practice, they can mutually agree to stipulate in the contract compensation mechanisms/formula that either party could receive compensation if, due to price fluctuations, the quantity of the goods delivered is less or more than was pre-agreed. On the producer/seller side, the compensation would reflect the extra quantity delivered, whereas on the contractor/buyer side the compensation would reflect the reduced quantity. This way, both parties to a Salam farming contract can achieve the same result as parties in conventional APCs.

5. LESSONS LEARNED

- Public investments in the agricultural sector, especially through integrated projects that include Islamic microfinancing, can trigger the growth of smallholder-led and inclusive VCs. The significant levels of financing made by IsDB, especially since the 2008 global food crisis, have undoubtedly had some tangible impacts. However, the evidence for this needs to be strengthened through rigorous independent studies.
- As the Uganda case study demonstrates, the use of Islamic financing to scale up inclusive VCs requires supportive institutional arrangements. A quasi-public institute or a similar entity with local reach can kickstart the process of creating awareness of and demand for Islamic financing services. Such entities can also lobby for supportive enabling policies.
- Public-private sector arrangements, such as those presented through the three country case studies (Uganda, Tunisia and Egypt) show the effectiveness of cross-sectoral partnerships in underpinning economic empowerment programs. Financing farmer associations and small and medium enterprises (SMEs) can be an important route to job creation and economic growth. Partnership financing – the core element of Islamic finance – provides an important source of funding for farmers and SMEs that might not be able to take on board debt financing. While the impacts of such financing mechanisms have been impressive, the next challenge is to scale up the business models. This requires a better

assessment, perhaps through independent entities, of what worked well and what didn't in the various development projects and programs financed by IsDB.

- The significant investments made by IsDB in the ARD sectors of its MCs have deployed a wide range of Islamic finance tools. There is, however, insufficient evaluation of how the various tools perform under different geographical and socio-economic conditions. This understanding is critical to the effective use of approaches such as contract farming to develop inclusive smallholder agriculture with strong links to local, regional and global markets.
- It is important to explore digital tools as a way of addressing the challenges and risks (production, payment and pricing) mentioned above that are associated with agribusiness, including but not limited to CF. FinTech solutions that deploy blockchain technology are one possible route.

6. CONCLUSION

The significant investments made by IsDB in its MCs have the potential to support the development of inclusive and sustainable VCs. In particular, by making Islamic financing instruments more accessible – whether for financing capital improvements or to de-risk agricultural systems – these investments have provided new pathways for unlocking the potential of smallholders and other economically disadvantaged communities.

As our work in Uganda has shown, public investments can provide the leverage for supportive policy frameworks as well as the levels of public awareness that are required for financial services to expand their reach and impact. All three country case studies also highlight the gains to be made from the economic empowerment of smallholders, including youth and women, through structured and supportive engagement with the private sector.

To build on this work, we recommend conducting rigorous and independent assessment of existing and past investments made by IsDB and its development partners, so that these lessons can be integrated into future programs. It is also important that MCs learn from each other about how to deliver financial products and structure policy instruments. Finally, we recommend exploring the potential of Islamic financing within CF to support the inclusive engagement of smallholders, particularly youth and women. These recommendations have the potential to enhance future interventions on the part of IsDB and its development partners in building the capacity of MCs to develop competitive VCs in areas where they have a comparative advantage.

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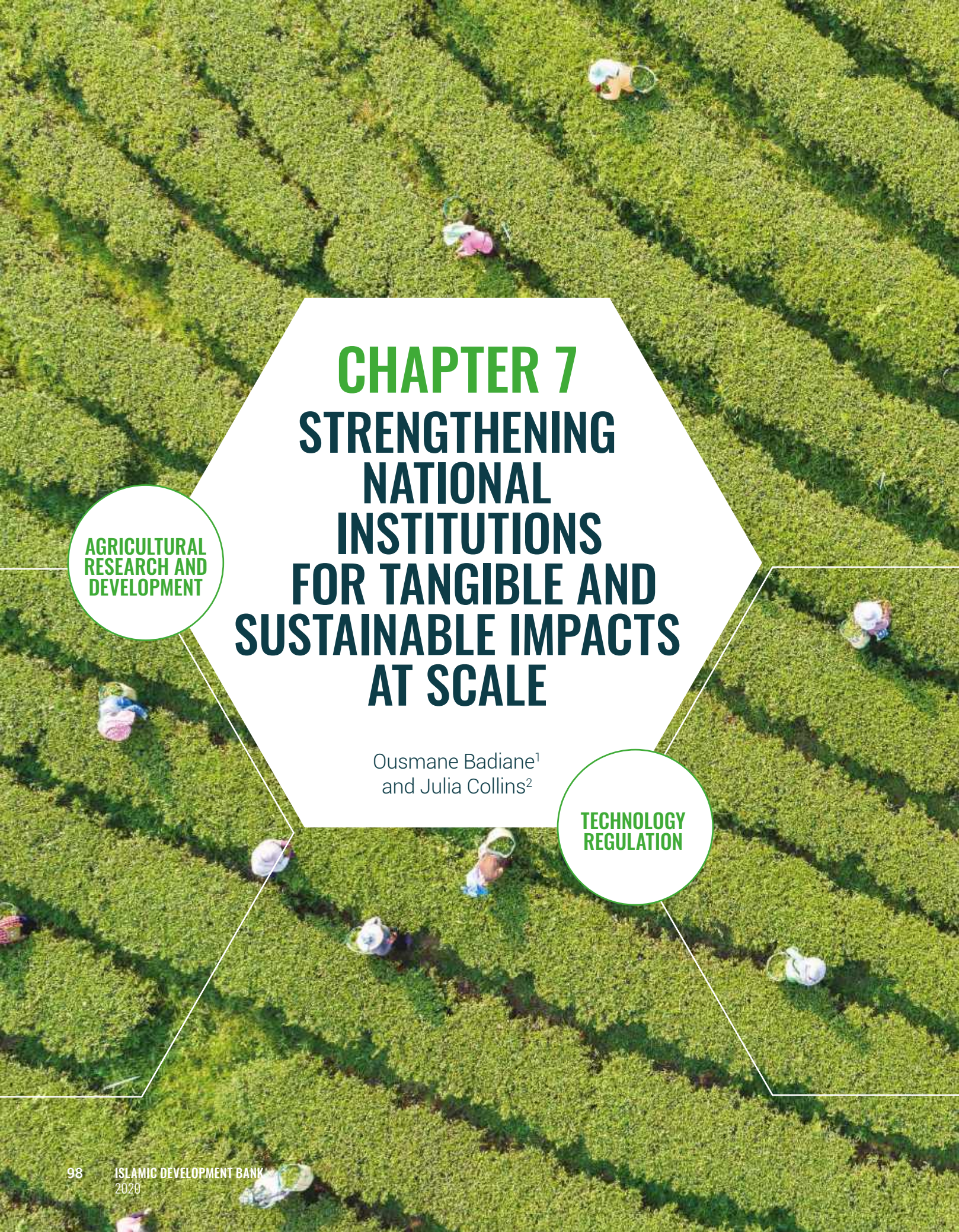
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CHAPTER 7

STRENGTHENING NATIONAL INSTITUTIONS FOR TANGIBLE AND SUSTAINABLE IMPACTS AT SCALE

**AGRICULTURAL
RESEARCH AND
DEVELOPMENT**

Ousmane Badiane¹
and Julia Collins²

**TECHNOLOGY
REGULATION**

KEY MESSAGES

- ◆ Skills development and upgrading at all levels – from farmers to agribusinesses to public sector actors to the youth who will become the next generation of innovators – are vital to increasing the efficiency and inclusiveness of value chains (VCs).
- ◆ Effective innovation systems require attention both to technology development as well as to increasing the use of existing innovations. Effective regulatory frameworks and a conducive business environment are required to facilitate the development and use of new technologies.
- ◆ Support to domestic small and medium enterprises (SMEs), capacity strengthening for Farmer Organizations (FOs), and provision of social protection programs are necessary elements of strategies to increase the inclusiveness and resilience of VCs.



AGRIBUSINESS

FARMER ORGANIZATIONS

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CHAPTER 7 STRENGTHENING NATIONAL INSTITUTIONS FOR TANGIBLE AND SUSTAINABLE IMPACTS AT SCALE

INTRODUCTION

The development of agricultural value chains (VCs) presents great potential for increasing welfare. As highlighted in the previous chapters of this book, VCs are a set of linked activities that work to add value to a product, and they consist of actors and actions that improve a product while linking commodity producers to processors and markets. Strengthening these connections will result in more opportunities for farmers and more choice for consumers. At every stage in the VC, there are individuals earning a livelihood, often with the potential to become more productive and gain higher incomes if constraints can be lifted and new skills acquired. More productive, efficient and inclusive VCs will do much to accomplish the Sustainable Development Goals (SDGs) by 2030, particularly on No Poverty (SDG1) and Zero Hunger (SDG2).

Governments and other national institutions – domestic agribusinesses, FOs, civil society, and others – have important roles to play in promoting inclusive VC development. In this chapter, we review some key institutions and make recommendations for increasing their contributions to smallholder-friendly agricultural VC development.

The first section examines institutions for science and technology, which are vital for raising productivity and building resilience to climate change at all stages of the VC. The second section discusses how governments can put in place a conducive rules-based business environment for private sector investment in all VC segments. The following section reviews key strategies to increase the inclusivity and resilience of VCs. These include supporting the growth of domestic agribusiness enterprises and their potential to provide remunerative employment opportunities; increasing the capacities of FOs to integrate smallholders into the rapidly expanding agribusiness VCs; and providing social protection programs to build the resilience of farmers and entrepreneurs against natural

as well as economic shocks. The fourth section discusses the necessary shift to evidence-based policy and program planning and execution and the supporting institutional infrastructure for mutual accountability for results. We close with key lessons learned, and a conclusion.

1. INSTITUTIONS FOR SCIENCE AND TECHNOLOGY INNOVATION

Years of research in countries across the globe have confirmed the primary importance of agricultural research and development (R&D) in raising agricultural productivity, and the large returns to government investments in agricultural R&D in terms of growth and poverty reduction (Fan, 2008). Much valuable research has been done to develop new crop varieties and animal breeds to increase yields, make better use of scarce resources, improve nutritional content, and defend against diseases and pests.

However, agricultural research and development is needed at all stages of the VC, not just production. R&D in processing technologies has enabled major strides in value addition in the past, and continues to be vital today to help link farm output with growing demand in urban centers. For example, the work of Senegal's national Institute of Food Technologies during the 1980s and 1990s to develop new processing technologies enabled a millet processing industry to emerge, first producing branded flour and then ready-to-eat products for urban markets. Today, millet consumption in urban areas is rising and the subsector of small domestic processing firms is expanding rapidly (Badiane and Ulimwengu, 2017). Such strategies can have transformative impacts on economies when used to develop strong local, regional and global VCs. This is, indeed, reflected in the renewed strategy of IsDB which is based on *'Making Markets Work for Development'* (IsDB, 2018).

NATIONAL AGRICULTURAL RESEARCH SYSTEMS

National Agricultural Research Systems (NARS) play vital roles in contributing to agricultural transformation and growth as well as VC development. As a rule, NARS in low-income countries are underfunded, and their budgets tend to be highly unstable due to reliance on donor funding, which causes difficulties in planning research. NARS tend to be composed of multiple institutions, for example a national agricultural research institution as well as university faculties of agriculture and other local institutions performing agricultural research. Often these institutions are poorly coordinated and lack links among themselves. Better efforts to coordinate NARS institutions are required, perhaps via oversight councils or shared research planning and implementation between national

DURING THE

1980-90s

THE WORK OF SENEGAL'S NATIONAL INSTITUTE OF FOOD TECHNOLOGIES ENABLED A MILLET PROCESSING INDUSTRY TO EMERGE.



Research and Development greenhouse at the ICBA, Dubai

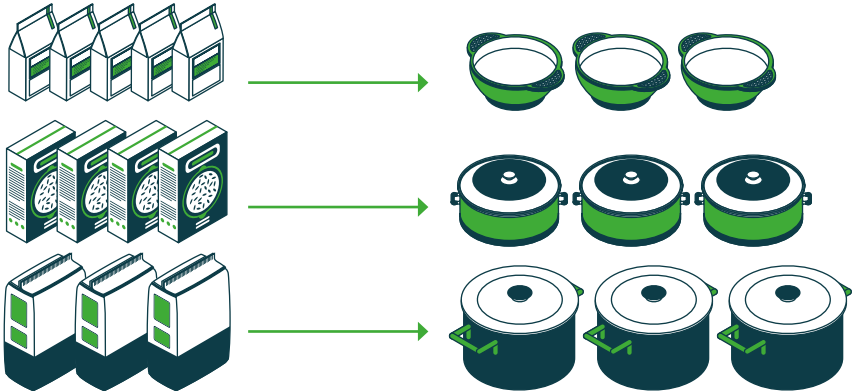
FIGURE 1 | TRANSFORMATION OF THE MILLET VALUE CHAIN IN SENEGAL (BADIANE AND ULMWENGU, 2017)

TRADITIONAL CHAIN
 RURAL CONSUMER MARKET



1. HOME BASED
 MILLET PROCESSING

EXTENDED CHAIN
 URBAN CONSUMER MARKET



2. READY TO COOK
 MILLET PRODUCTS ON THE SHELF

3. READY TO EAT
 MILLET MEALS ON THE SHELF



Suitable physical structures are important for market access and to enhance product quality

research institutions and university research programs (Roseboom and Flaherty, 2016).

Better coordination is also a challenge between NARS of different countries. Small countries have difficulties carrying out ambitious and expensive research programs to develop new technologies; there is potential for better use of resources if NARS can partner across borders to work on areas of common interest. In Africa, supranational institutions which work to promote cross-border partnerships include the Forum for Agricultural Research in Africa (FARA) and sub-regional research organizations for Southern, Western and Central, and Eastern and Central Africa. Regional cooperation has accelerated the dissemination of improved seeds in South and Southeast Asia: in 2014, Bangladesh, India and Nepal signed a seed sharing agreement which harmonized protocols and permitted the release and distribution of eight new rice varieties in the agreement area. Sri Lanka and Cambodia joined the agreement in 2017 (IRRI, 2017).

Developing and adapting new technologies requires sustained investment in NARS. However, technology development is only the first step. Technology delivery and support to promote adoption pose additional challenges. Agricultural extension programs are underfunded in many countries, and weak links between NARS and extension services limit the dissemination of technology as well as

the quality of advice provided to farmers. Opportunities and institutional mechanisms for greater collaboration between research and extension must be developed (Roseboom et al., 2016). Similarly, research by NARS should be geared more deliberately towards creating products and services for acquisition and scaling up by domestic private sector enterprises. This requires an institutional environment that ensures strategic connection between public sector R&D institutions and the domestic agro-industrial sector such as to constitute a single innovation ecosystem.

INSTITUTIONAL INFRASTRUCTURE FOR EMERGING TECHNOLOGIES

There is a pressing need currently for both public and private sector research systems to give substantially greater priority to new and emerging technologies, including biotechnologies and digital technologies. Countries need to acquire the expertise and technical infrastructure required to harness and safely deploy these technologies. Many countries currently lack effective mechanisms for the development, testing and approval of biotechnological innovations. A first-rate legal and regulatory framework for reviewing and permitting these technologies is a fundamental element of the institutional infrastructure for technological innovation. It would not only stimulate innovation in the public sector, but it would also encourage

more private sector involvement in biotechnology research and other emerging technologies (Pray et al., 2016). The development of robust and sustainable global VCs is, indeed, a key aim of IsDB's Science, Technology and Innovations strategy.

Digital technologies present many opportunities for raising agricultural productivity, including facilitating access to finance, communicating targeted weather and advisory information, and enabling efficient use of fertilizer and other inputs through precision agriculture tools, among others. Private sector research and development has a strong role to play in developing and adapting digital technologies, and the public sector, development partners, and large international firms can all productively partner with the domestic private sector to advance innovation. Regulatory bodies that ensure competition, raise quality of service, reduce barriers to access, and lower costs to marginal users are critical to the emergence of a healthy digital ecosystem. All of the above is easier to realize in an environment where the government places digitalization at the core of national agricultural growth and transformation strategies.

INSTITUTIONS FOR SKILLS DEVELOPMENT AND UPGRADING

The adoption and use of new technologies implies the acquisition of new skills. Effective institutions for skills development and upgrading are therefore important for the sustainability, scale and reach of technical innovations. In particular, institutions that broaden access to technical education and training at all stages – for farmers, extension agents, agribusinesses, and for the youth who will become the next generation of scientists, entrepreneurs and developers – are an important underpinning of a strong innovations system that raises productivity and fuels growth in all VC segments. Agricultural technical and vocational education and training (ATVET) is currently severely underfunded in many countries, despite the importance of vocational training to increasing agricultural productivity (Badiane and Ulimwengu, 2010). Reversing this trend ought to be a major

IN
2014

BANGLADESH, INDIA AND NEPAL SIGNED A SEED SHARING AGREEMENT WHICH HARMONIZED PROTOCOLS AND PERMITTED THE RELEASE AND DISTRIBUTION OF EIGHT NEW RICE VARIETIES IN THE AGREEMENT AREA.

IRRI, 2017

“ Effective institutions for skills development and upgrading are important for the sustainability, scale and reach of technical innovations. ”

goal of national agribusiness transformation strategies. Furthermore, there is a crying need for universities to expand offerings in programming and other IT areas to enable students to contribute to the development of new digital technologies (Malabo Montpellier Panel, 2019). The same applies to training in traditional agricultural sciences and emerging biotechnologies. NARS in many countries suffer from a shortage of Masters and PhD-level scientists, which reflects the need to develop more high-quality graduate programs (Roseboom et al. 2016). Online Learning Programs such as those developed by IsDB to expand access to Islamic financing could help develop the human capital needed to grow inclusive global VCs (IsDB, 2017).

FUNDING FOR SCIENCE AND TECHNOLOGY INNOVATION INSTITUTIONS

A chronic lack of funding is common to all the institutions involved in the areas covered above. Tight fiscal environments are a factor, but equally important are insufficient commitment, and consistency of effort. A key first step is for governments to define a science and technology strategy that embeds technical innovation at the centre of the agribusiness transformation agenda. This creates effective demand for innovation from the largest single client in most developing countries. Governments can then structure and use that demand as a catalyst to stimulate domestic scientific production and innovation through calls for proposals and other public procurement instruments to respond to the technical needs arising from the design and execution of programs across the public sector. This would include bidding by local private sector technology firms as well as collaboration with private sector actors on major technology initiatives (Roseboom et al., 2016). Development banks and other international organizations should also consider increasing investments in national and international agricultural research institutions and other elements of innovation systems. One example of this is the IsDB Science, Technology & Innovation Fund (IsDB-STIF) established in 2017 to accelerate STI-led solutions that drive inclusive and sustainable development in member countries (MCs).

IsDB Project Appraisal Mission:
Irrigated Agriculture Development
in Issyk-Kul and Naryn Regions
Project, Kyrgystan



2. INSTITUTIONS FOR A RULES-BASED BUSINESS ENVIRONMENT

Governments have an important role to play in establishing a predictable, transparent, and rules-based business environment to encourage VC development. One element of this role is providing public goods, including physical assets like electricity grids and transport and market infrastructure, as well as less tangible goods such as the definition and enforcement of rules to foster competition, standards, norms and grades. Competition raises incentives for the innovation needed to boost growth and raise competitiveness. Systems of grades and standards provide greater transparency regarding product quality, and offer incentives for farmers and agribusinesses to invest in increasing quality in order to earn a premium and access higher-value markets. In addition to domestic institutions to deliver the above, governments need to work together to enhance regional institutions seeking to boost competition and encourage investment and trade across national borders (Sabwa and Collins, 2018).

Other aspects of a conducive business environment include enforcement of contracts and protection for property rights, including intellectual property rights, to provide incentives for private research and development. Governments must also work to ensure that regulations affecting enterprises are clear, predictable, and efficient. A particular challenge is determining appropriate regulation for emerging technologies, including biotechnology and digital technologies.

An enabling regulatory and business environment can help to encourage domestic innovation in digital technologies as well as ensure that domestic and imported technologies provide maximum benefits. Standards for the quality of imported technologies and regulations for their use should be developed; Rwanda's regulation to ensure the safety of drones or Ethiopia's for adequacy of irrigation technologies are two examples. Smart regulations on data, service standards and competition, including interoperability between providers, are critical for a thriving digital agribusiness sector. Such regulations seek to find the right balance between ensuring the availability of broad access to data and content while protecting privacy rights. Several supranational data privacy frameworks exist,

“ Governments must also work to ensure that regulations affecting enterprises are clear, predictable, and efficient. ”

including the African Union's Convention on Cybersecurity and Personal Data Protection and regulations in several of Africa's regional economic communities. However, these frameworks are not consistently enforced at the national level (Malabo Montpellier Panel, 2019).

Biotechnologies present particular regulatory challenges. It is vital for regulatory frameworks to protect people and the environment from possible risks associated with new technologies; however, it is also important for regulations to avoid inefficiencies and costs that do not contribute to increasing safety, in order to ensure that more countries can share in the potential benefits of biotechnology. Governments should consider using information already available from other countries when approving adapted technologies already in use elsewhere. They should also examine the regulatory processes for any steps which do not add value in terms of protecting safety, and coordinate approval processes at the regional level to share or reduce costs (Falck-Zepeda and Zambrano, 2013).

3. INSTITUTIONS FOR DYNAMIC, INCLUSIVE, RESILIENT VCS

Strong economic growth in the past several decades, cutting across a large number of countries and regions, is fueling demand for processing products and triggering rapidly growing food processing sectors. Institutional infrastructure to facilitate access to technology and finance will be needed to sustain enterprise creation and growth. More importantly, the emerging processing sector is now the gateway for smallholders to benefit from rapidly rising urban demand. If it falters, it will not only fail to capture its fair share of revenues from domestic markets, it will cut off local farmers from an important future source of income. The previous chapters of this book provide good examples of how the digital revolution is being deployed to generate inclusive VCs, for example through the use of blockchain technology.

VC development in the above context holds the promise of distributing the benefits of productivity growth and added value widely, from rural producers and processors to traders and marketers to urban consumers. However, achieving *inclusive* VC development is not a given. Inclusion is not a philanthropic concern but a necessity to stimulate investment and resource mobilization for accelerated growth.

In this section we discuss important institutional requirements for ensuring: (i) the expansion and maturation of VCs for transforming staple crops, (ii) the effective integration of smallholders into these VCs, and (iii) the inclusivity of agribusiness VC growth and development for shared benefits along the entire chain.

PROMOTION OF ENTERPRISE CREATION AND GROWTH IN AGRIBUSINESS VCS

Higher incomes and increasing urbanization in many regions have led to rapid changes in the composition of food demand, often referred to as the nutrition transition. In addition to growing overall per capita food consumption, rising incomes have led to increased demand for purchased and processed food, as well as more high-value food such as meat, dairy, and fruits and vegetables. These changes are likely to become even more pronounced in the future, and will have wide-ranging effects on VC structure and employment opportunities.

Economic growth and urbanization in Asia have led to a series of changes in the structure and conduct of VCs, including the geographical lengthening of VCs; consolidation of firms; increased use of capital-intensive rather than labor-intensive production technologies; and more widespread use of contracts, brands and private food quality standards (Reardon, 2015). Some of these dynamics are just beginning to appear in Africa, triggered by the changes in food demand. However, traditional and modern products and domestic and imported brands do coexist. Focus group interviews in Lagos and Accra described in Hollinger and Staatz (2015) suggested that urban consumers preferred traditional foods but chose non-traditional products based on their greater convenience. Local convenience foods increasingly being consumed in urban areas include processed, ready-to-cook and ready-

to-eat forms of traditional staples. Institutions that help promote product innovation, food safety and quality, and norms and standards will help local firms capture a larger share of urban demand.

The small firms emerging in midstream VC segments face daunting constraints to growth. Low-productivity micro agro-processing firms in West Africa examined by Hollinger and Staatz (2015) rarely grow and formalize due to barriers including lack of skills, high costs, limited access to land and capital, and a 'social network economy' of reliance on friends and family that produces disincentives for growth. Leading firms must develop the capacity to differentiate their products by increasing quality in order to restore profitability. Midstream VC firms will contribute to employment and poverty reduction to the extent that microenterprises are able to grow and graduate into the 'maturation phase', characterized by increasing productivity and profitability.

The challenge for governments and partners is to facilitate microenterprises' access to finance (including Islamic financing), skills development and technology, and to promote innovation. Three priority areas for policy and investments are 1) process and product innovation 2) market development, and 3) cost of services and infrastructure access.

Under the first area, an institutional infrastructure is needed to facilitate skills development and upgrading, and to



Construction of Modern Rural Housing Project (Phase 1) funded by IsDB, Uzbekistan



Buhoma Community Lodge, Uganda. Rural ecotourism is successful thanks to the Rural Income and Employment Enhancement Project (RIEEP) funded by IsDB

promote technology acquisition along the VC. Institutions to expand and mainstream vocational and professional training for smallholders as well as for midstream VC actors are rare but sorely needed.

Under market development, efforts are needed to improve linkages between farmers and processors in order to facilitate access to raw materials, which is often a binding constraint on agro-processing enterprise growth (Hollinger and Staatz, 2015). Regional trade policy can also help to better connect producers with wider output markets as well as, potentially, broader sources of inputs for certain products. Simulation results published by Badiane et al. (2014) suggest that the removal of cross-border trade barriers would increase intra-regional exports of staple crops of Africa's different Regional Economic Communities (RECs) by around 10 to 30%.

Finally, high costs of services and limited infrastructure

“ The challenge for governments and partners is to facilitate microenterprises' access to finance and promote innovation. ”

pose severe obstacles to enterprise growth. Poor transport infrastructure limits the ability of firms to obtain sufficient raw inputs at reasonable cost to remain competitive and expand, while unreliable availability of electricity raises their cost of operation significantly (Hollinger and Staatz, 2015). Border bureaucracy also constrains enterprise creation and growth.

INSTITUTIONS FOR SMALLHOLDER INTEGRATION INTO AGRIBUSINESS VCS

As we have discussed, VCs can be made significantly more inclusive and viable through interventions to support small businesses. However, inclusive VCs must also find a way to better integrate smallholders. Evidence shows that more market-oriented farmers tend to have higher incomes, but many smallholders are largely cut off from VCs which could connect them with growing urban markets.

An important option to further smallholders' inclusion is to equip FOs with the required skills and capacities to help other VC actors do business with smallholders. FOs are good candidates for this role, as they present an opportunity for smallholders to collectively engage and negotiate with other actors. However, many FOs are underperforming or even inactive, and require additional tools to be able to effectively play an intermediary role (see Chapter 2 of this book for further discussion of this issue).

Francesconi and Wouterse (2019) showed that short-term training for cooperative leaders can be successful in increasing managerial skills and improving practices, resulting in increased FO revenues. Training provided to FO board members and managers in Uganda in 2016 and 2017 to discuss the problems associated with FO growth and propose solutions were shown to have contributed to increased revenues per member. The training focused on issues including defining membership size; establishing and enforcing membership agreements defining member contributions and benefits; and investing greater authority in FO management to avoid lengthy decision-making processes (Francesconi and Wouterse, 2019).

The size and dispersion of farm holdings are other major hurdles to overcome in building the capacities of FOs.

This is where the targeted deployment at scale of digital technologies can make a significant difference. Digital services can also make it possible to roll out at scale training and skills development programs to reach and enable a critical mass of farmers to meet the requirements of and participate in other VC segments.

PRODUCTIVE SAFETY NET INSTITUTIONS FOR RESILIENT VCS

Social protection programs provide many benefits, both for recipient households and in terms of promoting broader economic growth. They support the consumption of the urban and rural poor, create and protect household and community assets, lower inequality, and allow households to manage risk (Wouterse and Taffesse, 2018). The contribution of social protection to guaranteeing a minimum level of well-being and mitigate risk facilitates participation in VCs (see Chapter 5 for more on agricultural risk management). In particular, programs which include livelihood interventions targeted to linking farmers to other VC actors promote VC development more directly (Sulaiman, 2018).

Designing a social protection program requires decisions on a number of fronts. There is no one-size-fits-all solution. Among the considerations that will differ depending on the context are a program's transfer amount, modality, and targeting method. Whatever options are chosen, it is vital

to build monitoring and evaluation (M&E) into the design of social protection programs to enable assessments of effectiveness (Berhane and Hirvonen, 2018). (See Case Study 1).

Targeting recipients on the basis of poverty or vulnerability allows limited program funds to be directed to those who most need them. However, in developing countries it can be difficult to accurately assess potential beneficiaries' incomes and need. One potential solution is to use proxy means testing, in which observable household characteristics, such as the type of building material used for housing or other assets, are used to construct a score to predict household income level. Other options include: asking community leaders to identify the poorest families; providing social protection to all households in a limited geographic area with high poverty levels; providing social protection to all members of a certain demographic, such as children or the elderly; and designing programs which are open to all but which are likely to be attractive only to those in need, for example public works programs (Berhane and Hirvonen, 2018).

Transfer modality is another important design consideration. Cash transfers are less expensive to administer than in-kind transfers of food or other services, and in many cases seem to be the best option. However, there may be reasons to

BOX 1 | MUTUAL ACCOUNTABILITY IN AFRICAN AGRICULTURAL POLICYMAKING

Mutual Accountability is put into practice through multiple instruments in the Comprehensive Africa Agriculture Development Programme (CAADP), which was launched in 2003 as a continent-wide framework for agriculture-led development. Examples of MA include agricultural Joint Sector Reviews (JSRs) at the national and regional levels, and the continental Biennial Review (BRs).

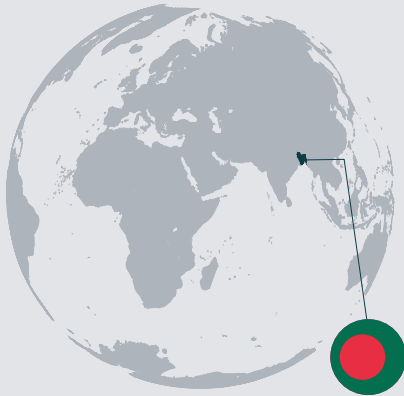
JSRs are regular, usually annual, agricultural review platforms which provide an opportunity for different national stakeholder groups to come together to assess agricultural sector status and the progress of different parties' commitments, and provide input to inform future policymaking. JSRs in many countries have been successful in allowing non-state actors to have a voice in policy formulation.

The BRs are a key expression of MA at the highest levels in African agricultural policymaking. In the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods, African leaders committed to

MA to actions and results, to be operationalized in part through a biennial agricultural review process. The first BR was held in January 2018, with 47 out of 55 African Union member states submitting data on progress toward agricultural development goals and commitments. The broad level of participation enabled the first ever collective review of agricultural development in different countries and regions.

The BR represents an important opportunity for African leaders to be accountable for development results to their national stakeholders and in front of their neighbors and the broader development community. Following the first BR in 2018, there was great interest among national policymakers in understanding the contributors to their scores and in taking action to improve them. JSR and BR experiences in Africa illustrate the importance of both national and international review platforms to track and monitor agricultural outcomes and inform policymaking. (Source: African Union Commission, 2014).

**CASE STUDY 1 | SOCIAL PROTECTION
IN BANGLADESH**



Bangladesh has made remarkable strides in reducing undernutrition, likely due in part to its social protection provision. Its experience offers insight into social protection program design, as well as on the value of monitoring and evaluation to improve interventions and inform evidence-based policymaking.

The Transfer Modality Research Initiative, implemented by the International Food Policy Research Institute and the World Food Programme from 2012 to 2014, randomized the type of transfer received by social protection recipients. Four groups of participants received, respectively, cash transfers, food transfers, both cash and food, and cash or food in addition to education on household nutrition. The results showed that the provision of nutrition education significantly increased the health and nutrition benefits of social protection, with recipient households showing large drops in child stunting. Shortly after the study was concluded, the Government of Bangladesh completed the design of its National Social Protection Strategy (NSPS). Based on the results as well as other information, the government chose to include an educational component in the NSPS.

The experience of Bangladesh demonstrates the importance of on-



going monitoring, assessment and review in improving program design and increasing impacts, as well as producing the potential for scaling up by broader policy initiatives. (Source: De La Paz, 2016)

prefer in-kind transfers in certain situations, such as when markets are not functioning or during periods of rapid food price inflation (Berhane and Hirvonen, 2018). Other types of social protection programs provide transfers combined with additional services and support, such as skills development or VC development interventions.

Graduation approaches are a type of livelihood-focused program which target the extreme poor and provide them with sequenced, comprehensive services – usually including cash and asset transfers and household-specific training and coaching – to both provide a temporary safety net and allow households to shift to livelihoods activities that would allow them to escape extreme poverty and thereby ‘graduate’ from the program. Graduation programs are relatively new, but the existing evidence on impacts of graduation programs shows them to be successful at reducing extreme poverty, and with more robust long-term effects than other types of social protection programs, such as cash transfers (Sulaiman, 2018).

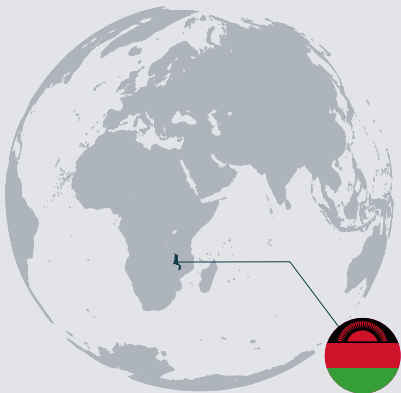
Finally, some consideration should be given to making social protection coherent with other agricultural development goals. Increasing recognition of the importance of social protection is reflected in its growing share in the national

budgets of many countries. Given the often low – or even decreasing – share devoted to agriculture, it is vital to seek and exploit synergies where social protection programs can also contribute to increasing agricultural labor productivity, and thereby help to sustainably reduce rural poverty (Makombe et al., 2018).

4. INSTITUTIONS FOR MUTUAL ACCOUNTABILITY AND EVIDENCE-BASED POLICYMAKING

As we have seen, government policies affect every aspect of VC development. Governments can do much to forge links between actors, ease access to required resources, and facilitate private sector investment, or alternatively to constrain development. The importance of good policies is demonstrated by the evolution of Africa’s agricultural and economic growth over the past six decades. After initial strong growth following the independence of many African countries in the 1960s, both agricultural and overall economic growth began to decline in the 1970s and 1980s, resulting in years of falling living standards and rising numbers of poor. Agricultural growth began to recover in the late 1980s, and during the 2000s, several African countries figured among the fastest-growing in the world.

CASE STUDY 2 | MALAWI'S JSR EXPERIENCE



Malawi established its agriculture Joint Sector Review (JSR) process in 2012. At first, the JSR had a narrow focus on reviewing activities of the Ministry of Agriculture, Irrigation and Water Development (MoAIWD). Civil society and development partners attended JSRs, but their roles were relatively small.

In 2014, the Regional Strategic Analysis and Knowledge Support System (ReSAKSS), an initiative supporting knowledge and evidence needs related to CAADP implementation, carried out an assessment of Malawi's JSR on behalf of the African Union Commission and the NEPAD Planning and Coordinating Agency. The assessment produced recommendations which included building MoAIWD's monitoring and evaluation (M&E) capacity, improving coordination between MoAIWD and other ministries, and incorporating the activities of non-state stakeholders into JSR reporting.

Since then, MoAIWD and other JSR organizers have made changes to strengthen the JSR process by broadening the focus to review outcomes and impacts as well as outputs, and making the process truly inclusive by covering the actions and contributions of non-governmental actors including the private sector and civil society.



Malawi's JSR offers stakeholders an opportunity to influence agricultural policymaking. For example, during JSR discussions stakeholders proposed reforms to Malawi's Farm Input Subsidy Program (FISP), which provides seeds and fertilizer to maize farmers. Although the FISP has been credited with positive impacts, it has also given rise to concerns that the program shuts out the private sector from input markets, and that its high costs divert much-needed resources from other areas. MoAIWD is putting into practice changes

“ There's a sense now of having to contribute to improvements in the sector without looking at constituency demarcations. ”

Mr. Readwell Musopole, MoAIWD's Deputy Director of Planning

recommended during JSRs, including contracting with private sector suppliers to distribute inputs, adjusting targeting, and lowering the share of resources allocated to the FISP.

In addition, the JSR has contributed to a culture of participatory agricultural sector planning and development. Mr. Readwell Musopole, MoAIWD's Deputy Director of Planning, stated that “It's no longer difficult to bring together players in the sector. There's a sense now of having to contribute to improvements in the sector without looking at constituency demarcations.” Malawi's well-functioning JSR helped the country successfully navigate the reporting process of the first-ever continental Biennial Review. Many JSR participants actively contributed to the Biennial Review process, and the country was one of only a few which carried out a multi-stakeholder workshop to validate the Biennial Review data in 2017.

Source: Makombe & Collins, 2018

“ Agricultural and economic recovery followed widespread policy reforms in many countries. ”

The reasons for economic decline and recovery are numerous, but chief among them are shifts in the types of policies pursued by governments. Agriculture has variously been neglected, taxed to subsidize industry, or subjected to heavy regulation which left little space for private sector choice and investment from farmers, input suppliers, processors, and traders. Agricultural and economic recovery followed widespread policy reforms in many countries which improved macroeconomic governance and facilitated greater private sector activity.

Past leaders, like those today, chose their policies with the goals of enhancing national development; they made choices which appeared rational according to the still-forming development theory. Then, as now, policymakers could not predict outcomes with complete accuracy. How, then, can leaders select beneficial policies, and how can they ensure that the damage of bad policies is limited sooner rather than later?

Institutions that entrench the use of high-quality data and technically rigorous evidence are critical for the design and implementation of effective policies and programs. But which evidence should be used? Experience from other countries offers important insights, but policy solutions are not always transferrable to different contexts. Thus, policymakers need to have access to local expertise capable of producing evidence based on local realities. Local evidence is also a necessary component of efforts to promote Mutual Accountability (MA). MA is a process through which different parties, such as governments, donors, private sector organizations, FOs and development agencies hold each other accountable for agreed-upon actions and results. MA is key to successful policy implementation, and depends upon data availability and regular dialogue and review. Certain institutional infrastructure is necessary to meet the data and analytical needs of review and dialogue processes for effective MA. Five key elements of an evidence-based policymaking environment can be identified:

1. Improved data systems.

Comprehensive data collection and management is important to ensure that policymakers can immediately access data to meet emerging needs. A successful approach is for actors in national agricultural data systems

to organize themselves into working groups with defined responsibilities. Different members of the working group are then given responsibility for specific data clusters, for example, data on production, consumption, prices, trade, among others.

2. Ready-to-use top expertise.

The data working group institutions and additional centers of expertise at the national level can be organized into a local analysis network ready to perform research to meet the knowledge needs of national policymakers. Mechanisms to engage local expertise should be put in place, including agreements on long-term research priorities as well as vehicles to communicate short-term needs for evidence and technical input on emerging issues.

3. Effective coordination / brokering function.

The working groups and local analysis network require coordination to ensure that roles and responsibilities are well defined and that research and analysis meets evidence needs. A dedicated planning and coordination team should be put in place to define the demand for policy research, establish well-functioning connections among local analysis network institutions, and maintain the links between knowledge supply and demand to ensure that evidence is available to inform policy formulation.

4. Operational knowledge management.

Once knowledge and evidence are created and used, they must remain available to fill future needs. It is equally important to ensure that access to knowledge and evidence is broad and information is freely accessible by any potential user. A best practice is to create a web-based, open knowledge platform to house and disseminate data and other knowledge products.

5. Inclusive policy dialogue.

Different agricultural stakeholders – farmers and FOs, agroprocessors, traders, governments and development partners – experience the impacts of policies in different ways and have important knowledge which should be harnessed to inform policymaking. An inclusive policy dialogue platform that invites broad debate about strategic issues and choices is important to allow multiple voices to play a role in the policymaking process.

MA principles have been operationalized in a variety of ways by different countries. In Africa, continental bodies and national governments have institutionalized MA and the principle of evidence-based policymaking in agricultural policy frameworks and systems (see Box 1 and Case Study 2).

5. LESSONS LEARNED

- Governments must define a science and technology strategy that places technical innovation at the center of the agribusiness transformation agenda and creates links between public R&D institutions and the domestic agro-industrial sector. NARS must be adequately funded and better coordinated internally and with counterparts in neighboring countries.
- Effective institutions for education and skills development and upgrading at all levels are vital. Increasing funding for agricultural technical and vocational education and training (ATVET) should be a high priority in order to increase agricultural productivity and value addition.
- A key element of the institutional infrastructure for technological innovation is an appropriate regulatory framework for new technologies. Regulations must protect safety, enhance competition, raise quality, and reduce barriers to access.
- FOs are well-placed to link smallholders with VCs and the higher income opportunities they represent, but require support to develop their managerial and other necessary skills. Digital technologies represent promising opportunities for skills building and enhancing connections with other VC actors.
- The shift to evidence-based policymaking is an important innovation which has contributed to better agricultural outcomes. Governments and centers of expertise at the national level should work together to develop systems to link the demand for evidence and knowledge with supply.

6. CONCLUSION

Agricultural VCs across the globe are changing in exciting ways. In many countries, crops and livestock produced by smallholders in rural areas are being transformed into high-value products that meet the needs of urban consumers. However, farmers, processing firms, and other VC actors face often daunting challenges, from weather risks to insufficient infrastructure and public services to lack of skills and capacities, which limit their abilities to participate fully in VCs or to create the most value from their participation.

Governments have major and vital roles to play in lifting the constraints faced by agricultural stakeholders. Public sector responsibilities include adequately funding agricultural research and development and establishing conducive business environments. They must also support the resilience of smallholders through the provision of social protection, provide support for small and medium enterprises, and invest in capacity strengthening and educational opportunities at all levels. Evidence-based policy formulation, implementation, and review processes are also essential.

Other national institutions, in particular FOs and domestic agribusiness firms, are also important players with the power to increase the inclusivity of VCs. This was highlighted in Chapters 2, 3 and 4 of this book. All agricultural sector stakeholders can contribute to VC development by engaging in policy dialogue and review platforms and holding themselves and others in the sector accountable for commitments and outputs. The JSRs and BRs can, as amplified by case study 2 on Malawi, contribute to the evidence required to inform policy and also act as an effective platform for stakeholder consultations, coordination and monitoring progress. This is essential for enhancing mutual accountability among stakeholders. This approach to policy formulation and stakeholder engagement is indeed central to IsDB's Member Countries Partnership Strategy, which prioritizes and develops sustainable and inclusive global VCs. Many stakeholders, including the private sector and the civil society, are involved in that process.

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CHAPTER 8 **SMALLHOLDER- INCLUSIVE VALUE CHAINS: SYNOPSIS AND THE WAY FORWARD**

**VALUE
CHAINS**

Bashir Jama¹

SDGs

KEY MESSAGES

- ◆ The most successful approach to making markets work for smallholders is one that locates them within the entire market system. Identify the key constraint(s) to sustainable smallholder participation: is it government policies, access to resources, or something else? Then, address this using a multi-sectoral, collaborative approach involving all value chain (VC) actors, governments and NGOs where appropriate.
- ◆ Public investments are crucial to growing inclusive VCs at scale. IsDB has supported its member countries (MCs) with significant levels of funding for such investments ever since the bank's inception in 1975. In addition to supporting infrastructure development, IsDB funding has engaged the private sector in developing unique economic empowerment programs that deploy Islamic financing products to create employment opportunities in general, and for young people and women in particular.
- ◆ Skills development and upgrading at all levels is vital to increasing the efficiency and inclusiveness of VCs. Support to domestic SMEs, capacity strengthening for Farmer Organizations (FOs), risk management tools and the provision of social protection programs are also all necessary elements of strategies to increase the inclusiveness and resilience of VCs.



SUSTAINABLE
DEVELOPMENT

RISK
MANAGEMENT

¹ Bashir Jama, Lead Global Management, Food Security Specialist, IsDB

CHAPTER 8 SMALLHOLDER-INCLUSIVE VALUE CHAINS: SYNOPSIS AND THE WAY FORWARD

INTRODUCTION

Commercializing smallholder agriculture is essential if we are to achieve the SDGs, notably SDG1 (No Poverty) and SDG2 (Zero Hunger). This is particularly so in the 57 IsDB member countries (MCs), many of which rely on the agricultural and rural development sector as the backbone of their economies.

However, the sector is currently not fulfilling its potential to contribute significantly to economic growth. To remedy this, most of the MCs are pursuing strategies aimed at commercializing smallholders, and the value chain (VC) approach is one that is gaining dominance given its potential to tap into the transformative power of local, regional and global markets. IsDB is committed to supporting these efforts, and it is doing so through an approach based on the idea that *'Making Markets Work for Development'* requires sustainable and holistic VCs (IsDB, 2019). This book – *Inclusive Growth: Making Value Chains Work for Smallholder Farmers* – aims to complement our efforts to transform the smallholder sector.

Fortunately, the basis for a VC-led approach to link smallholders with markets already exists. Farmers are already linked to varying extents with formal and informal markets, both for production inputs (such as seeds and fertilizers) and outputs (crops and livestock, including fish). The significant investment made by IsDB in the agriculture and rural development (ARD) sector – over US\$16 billion since the bank's inception in 1975 – has contributed to developing some VCs, but more needs to be done.

The various chapters of this book have recognized the importance of these linkages and of connectivity in building strong and sustainable VCs that operate at scale. Such VCs embody the triple bottom line of sustainability: economic (profitability), social (inclusivity, especially for women and youth) and environmental (doing no harm to production ecologies). Key ingredients for success towards this end are increased public investment, and a policy environment that encourages strong private sector engagement.

The role of the latter is particularly critical, and the question is how best to engage and retain private sector participation.



Cattle market, Mali

IsDB'S INVESTMENT OF OVER
US\$16 BILLION
IN THE AGRICULTURE AND RURAL
DEVELOPMENT (ARD) SECTOR
HAS CONTRIBUTED SIGNIFICANTLY
TO VC DEVELOPMENT.

One of the challenges is the lack of enabling policy environments in many countries. Another is the absence of skilled labor. Effective institutions for education, skills development and upgrading at all levels are therefore vital to sustain the development of strong VCs. Greater funding for agricultural technical and vocational education and training (ATVET) is increasingly recognized as critical to developing sustainable VCs.

These considerations are all essential to growing the ARD sector. As Chapter 1 highlighted, this growth is crucial because the ARD sector has such strong potential for accelerating the achievement of the SDGs by 2030, especially SDG1 and SG2.

The six core chapters of the book have provided comprehensive – though not exhaustive – analyses of the subject. Case studies have provided evidence of successful approaches. The chapters have focused on key commodities of relevance to our MCs and issues of significance to developing sustainable VCs around them. This final chapter attempts to provide policymakers with some high-level entry points for commercializing smallholder agriculture through sustainable and inclusive VCs.

1. STRENGTHEN SMALLHOLDERS' MARKET POSITION

The case studies presented in Chapters 2 and 3 point to one important lever that is crucial to success: locating smallholders, through strong Farmer Organizations (FOs) or other associations within the entire market system. This requires identification of the key constraint(s) to sustainable smallholder participation. Is it government policies, access to resources, or something else? These constraints then need to be addressed using a multi-sectoral, collaborative approach involving all VC actors, governments and NGOs where appropriate.

Strong FOs are crucial to successful commercialization as they provide a platform for the private sector to build VCs, leading to lower transactional costs and higher incomes for

all participants. Many IsDB-funded ARD projects therefore include interventions for strengthening FOs, based on the evidence (see Chapter 2) that FOs are well-placed to link smallholders with VCs and the higher income opportunities they represent. However, these organizations require support to develop managerial and other necessary skills. An important aspect of such support is the strengthening of linkages with the private sector. Indeed, the private sector provides a critical lever to success, and as the case studies in Chapter 2 show, its transformational power often comes from various configurations of private sector actors working together to solve development and business problems by creating joint ventures that benefit from smallholder farming communities, while also delivering benefits to them. This generates a consortium of agribusiness partners, including FOs. The public sector and civil society (NGOs) can play a facilitation and capacity development role for the consortia.

The potential of taking a geographic or territorial approach to VC development is looked at more closely in Chapter 3. Although territorial development initiatives are not a new trend, their application to the agriculture and agribusiness sectors has been expanding considerably over the last few years. The chapter highlights key observations from a recent study (FAO, 2017) on this subject. It identifies and discusses the pros and cons of a set of policy tools, including corridors where development programs foster promising agricultural sectors in a territory by facilitating access to markets, inputs and services, and leveraging economies of scale along a physical backbone of transport infrastructure (roads, railways, ports and airports).

Emerging digital tools offer enormous potential as levers to enhance the performance and reach of VCs. Mobile phone technology can spread awareness on appropriate farming practices, help to overcome trade and market information challenges, improve farmers' links to markets, and support communication between producers, input suppliers, consumers and sources of innovation such as agricultural research and extension agencies. By way of example, Chapter 3 outlines the potential benefits of one digital innovation – blockchain technology – which is receiving more and more public attention. The transparency and traceability that this technology offers can help address a multitude of systemic challenges in a virtual ecosystem. Even so, it is not a silver bullet and the potential of blockchain to tackle specific challenges and problems needs to be assessed on a case-by-case basis. In addition, the application of digital technologies in least-developed countries carries the risk of imposing greater digital divides that could result in deepening inequality and widening gaps between multinational conglomerates and domestic businesses and SMEs.

2. TAKE A MARKET SYSTEMS APPROACH

The first three substantive chapters of the book look at staple food crops, non-staples and livestock, providing insights into how various approaches and principles can guide the development of VCs at scale, and sustain them. Many successful programs and case studies are demonstrated in the chapters, led by government efforts, NGOs, and the private sector. However, their scope, inclusivity and sustainability are often limited. Taking a holistic market systems approach that determines and aligns the incentives of the key market actors is critical to achieving scale and sustainability.

As Chapter 2 explains, a market systems approach works towards achieving changes in the standards, rules and regulations, relationships, and formal and informal barriers that collectively influence how actors in a system behave. The analysis in the chapter elaborates on the benefits of such systemic approaches, showing how addressing unstructured or poorly regulated markets and VCs can unlock their potential to be inclusive to all participants – especially smallholders – and thereby generate tangible, sustainable social and economic benefits. A systems approach integrates the many existing approaches to market development, including those led by government initiatives, NGOs, and the private sector. It is evident, as Chapter 3 highlights, that the benefits of the systems approach are amplified, enhanced and become more sustainable when set within an agri-food system that takes a territorial or geographic approach.

The market systems approach for specific commodities can vary within and across countries, with different policy measures required. Identifying the necessary measures should be a comprehensive exercise and explore where the comparative advantages lie for a given country or region. This should include a consideration of livestock VCs, which are often given too little attention even though they have significant potential to draw smallholder producers and the poor into VCs. Chapter 4 provides a set of principles to guide that process.

A key principle set out in Chapter 4 – one that is in fact common to all VCs, including non-livestock ones – is to start by understanding the market (national, regional and global) and to not overlook informal markets. In terms of volume, domestic and regional markets may offer more market opportunities than export markets further afield. International trade in livestock products such as milk powder and frozen poultry receives a high level of public and media attention, but as a share of production, such trade is generally low. The majority of livestock products are actually consumed in the same countries where they are produced, and this is particularly true in lower

and middle-income countries. Several case studies in this chapter highlight the benefits of local and regional markets. Indeed, participation in global VCs is constrained by several barriers, including the requirements for high standards in product quality, inconsistent volumes of supply, and by sanitary and phytosanitary measures to ensure food safety and disease control.

One opportunity for the development community is to help countries capture regional demand for livestock products, and to use this as a launching pad to global VCs. For example, the Middle East and the Arabian Peninsula comprise a major demand center for live animals such as sheep and goats, which are mostly supplied from the Horn of Africa and from smallholder pastoral production systems. Uganda, now recognized as having one of the world's lowest costs of milk production, has in recent years become a significant exporter of milk powder, mostly to regional markets. Investments by IsDB in the livestock sector there, especially in strengthening producer associations, have contributed to this growth.

Some VCs require greater public investments than others. Livestock is one of them, as is underscored by Chapter 4. Livestock Masterplans need to be developed that capture this requirement and other important interventions, and that set targets and processes to monitor them. It is worth noting that IsDB has provided support to several MCs in 2018/2019 to develop such plans with the technical support of the International Livestock Research Institute (ILRI).

“ The market systems approach for specific commodities can vary within and across countries, with different policy measures required. ”



Extension services provided in Morocco by OCP, a private fertilizer producer, include mobile clinics



Smallholder barley production for remunerative local markets, Morocco

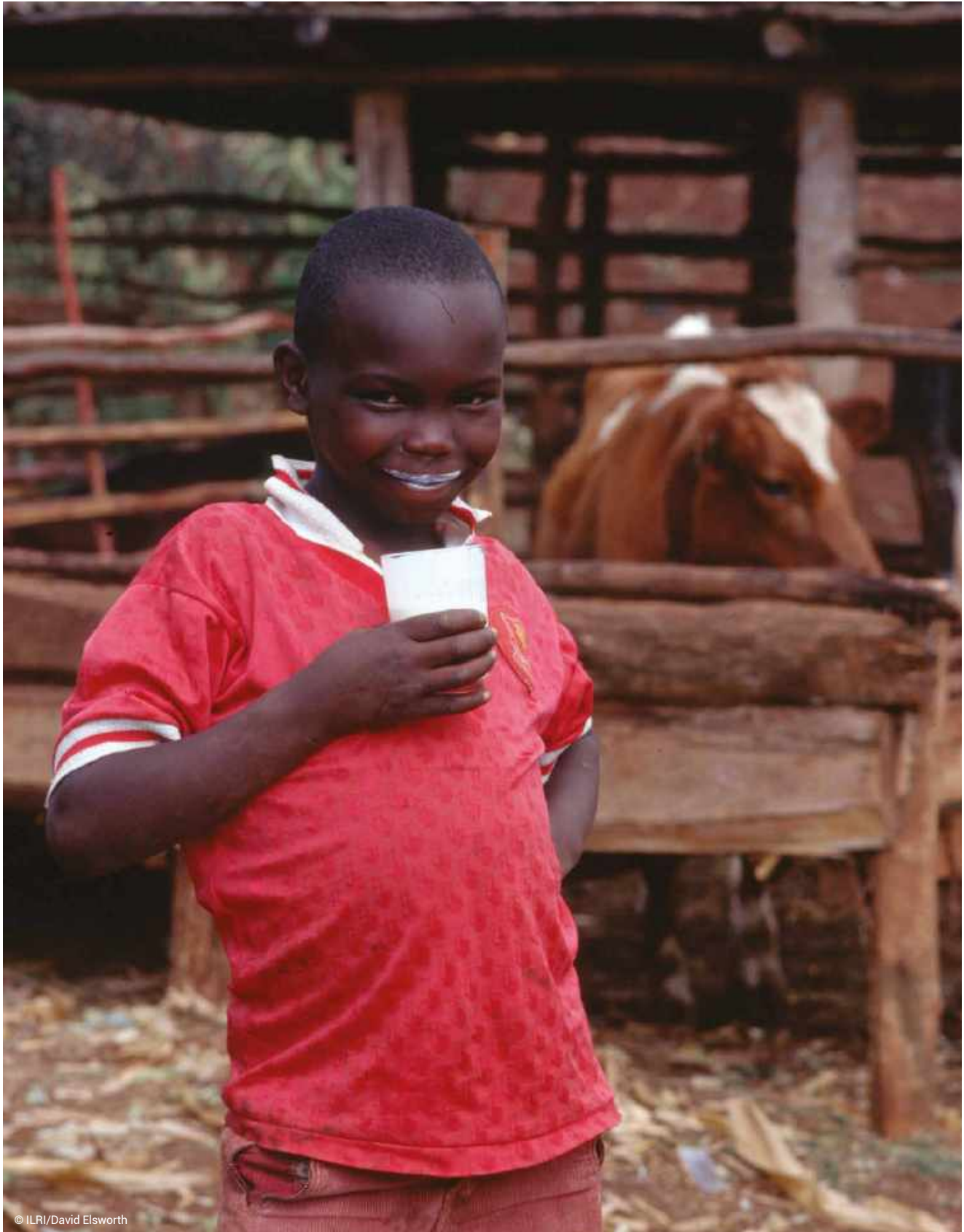
3. DE-RISK VCS TO BUILD RESILIENCE

The high risks associated with production, price and income fluctuations are major challenges to developing sustainable smallholder-oriented VCs at scale. Weak climate resilience exacerbates further the risks of the agriculture sector. A set of promising solutions are proposed in Chapter 5, including sovereign-level insurance schemes such as the African Risk Capacity. This has emerged over the past 10 years as an innovative risk financing mechanism structured to give African countries better national risk management systems, not only by unlocking critical and timely financing to support efficient responses to disasters, but also by helping them better prepare and plan for the impacts of climate change.

Public sector insurance schemes can also be blended with private sector ones. The case study on Kenya's Index-Based Livestock Takaful insurance product showcases what is probably the world's first insurance service developed specifically for resource-poor pastoralist

communities in the arid and semi-arid regions. The product is based on research by ILRI together with its partners and is implemented by a private company.

Insurance is of course not the only way to de-risk agricultural VCs: other valuable approaches include measures to build the resilience of production systems through the extension of climate-smart agricultural practices. This includes, as the case studies from Burkina Faso and Mali highlight, access to improved drought-tolerant or early maturing seed varieties. The provision of such inputs must be accompanied by measures to increase access to markets and minimize post-harvest losses. Public sector support can be handy in scaling up such interventions through programs that can unlock financing. A good example of this is the Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) Fund that was created in 2013 to encourage banks to lend to agricultural VCs by offering them strong incentives and technical assistance.



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4. USE PARTNERSHIPS TO AMPLIFY THE IMPACT OF FINANCING

Financing by the public sector and its development partners can have significant multiplier effects in growing inclusive VCs at scale. Besides infrastructure, public support in less tangible goods such as the definition and enforcement of rules to foster competition, standards, norms and grades is critical to private sector growth and the equitable inclusion of smallholders in VCs. Chapter 6 underscores this fact and provides insights into how public-private-partnerships can be the route to unlocking impactful financial investments.

The chapter starts by acknowledging that public financing can play a critical leveraging role if deployed well. It is in this context that the IsDB Group has deployed significant financing (over US\$ 16 billion) to various aspects of ARD in its MCs since 1975. This financing has helped many MCs increase the total amount of land under irrigation and develop rural access roads, thus linking farmers to markets.

A wide range of Islamic financing products have been deployed as part of this process. Some, such as Salam and Murabahah, have been deployed through PPP projects targeting job creation opportunities for youth and women. Significant learnings have emerged from two case studies on programs in Tunisia and Egypt, based on the development of economic empowerment programs in partnership with the private sector. The transformative power of such programs can be enhanced through development partners, including multilateral banks and bilateral donors, co-locating other development projects in the same area. This avoids duplication and generates synergies for greater impact at scale.

IsDB GROUP HAS
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TO VARIOUS ASPECTS OF ARD
IN ITS MCs SINCE IT BEGAN
ITS ACTIVITIES IN 1975.



Dykes to regulate water for irrigation, Mauritania

5. STRENGTHEN NATIONAL INSTITUTIONS AND THE POLICY ENVIRONMENT

Chapter 7 brings to our attention the fact that a variety of national institutions have important roles to play in advancing inclusive VC development and helping agriculture and food systems to meet their potential to reduce poverty. These include national agricultural research systems and other institutions for science and technology with the ability to drive innovation and raise productivity and competitiveness in all VC segments.

They also include public services and regulatory agencies that help nurture a transparent and efficient business environment; private sector enterprises and their allied entities in the emerging agro-industrial segments; Farmer Organizations with their ability to link millions of dispersed smallholder holder farmers to other VC actors; and social protection programs that help mitigate shocks and protect assets.

All of the above need to be supported by a solid institutional infrastructure, including the required data and analytical expertise, to generate locally relevant evidence to guide policy formulation and implementation. Although there are many building blocks to put in place, progress can be achieved through effective partnership and well targeted collective action by governments, the private sector and other non-state actors.

6. THE WAY FORWARD

Agricultural VCs across the globe are changing in exciting ways. In many countries, crops produced by smallholders in rural areas are being transformed into high-value products that meet the needs of urban consumers. Entrepreneurs are creating jobs while linking smallholders to lucrative markets. Strong economic growth in the past few decades, cutting across many countries and regions, is fueling the emergence of new VCs and triggering rapidly growing food processing sectors. This provides a gateway for smallholders to link up with and benefit from rising urban demand. If this is not done successfully and sustainably, it is a missed opportunity for these producers to capture a fair share of revenues from domestic, regional and global markets.

VC development in this context holds the promise of distributing widely the benefits of productivity growth and value addition. These benefits can extend to rural producers, input suppliers, processors, traders, marketers and urban consumers. However, achieving *inclusive* and *equitable* VC development is not a given. Rapid growth, if it is not broadly shared, gives rise to perceptions of exclusion and to social tensions. Countries and development partners must make

efforts to ensure that as many segments of the population as possible, particularly the poor and vulnerable, enjoy the benefits of growth.

Taking a systems view enables agribusinesses to sell productivity and profitability to farmers rather than focusing on their products. This unlocks the potential for smallholders to respond to market opportunities and operate with a profit mindset. Achieving this kind of systemic change requires all parts of the agricultural market ecosystem to

“ The case studies and reviews provided throughout this book provide insights and evidence for developing smallholder-friendly, inclusive VCs. ”



work in concert, both to address market failures and to create positive feedback loops. Partnerships, consortiums and business alliances are therefore crucial to developing inclusive delivery models that can be delivered through a territorial or a geography-based VC-driven approach.

This inclusion is not a philanthropic concern but a necessary driver of investment and resource mobilization for accelerated growth. If, for instance, smallholders are not connected to the rapidly transforming VCs triggered by urbanization and a rapidly growing middle class, they will not only fail to share in the wealth being created, they will also fail to ensure a competitive supply of raw materials to sustain expansion of the downstream VC segments. Moreover, because poverty is concentrated among rural smallholders, their exclusion from VC development would undermine the ability of developing countries to reduce poverty and make progress towards the SDGs.

The case studies and reviews provided throughout this book provide insights and evidence for developing smallholder-friendly, inclusive VCs. Many programs and projects in developing countries, including IsDB's MCs, are already deploying the tools and approaches discussed in this book. We need to continue to support them with evidence, experience and knowledge in order to sustain their momentum. Going forward, that means:

- Increasing cooperation between MCs with more developed VCs and those with less developed ones. A good way of scaling this up is through the Reverse Linkage approach that IsDB has deployed well so far, linking one MC with skills in a given area with another that is in need of those skills and innovations.
- Demonstrating the value of VCs in generating inclusive benefits. There needs to be greater investment in monitoring and evaluation systems that register the contribution of all partners in a given VC and foster the principles of mutual accountability. Blockchain technology may be one pathway to achieving this.
- Redesigning formal training and extension programs to incorporate skills in facilitating private sector-led VCs in regions where this is limited.
- Equipping FOs with the required skills and capacities to help other VC actors do business with smallholders. Notwithstanding their challenges, FOs are good candidates for this role, as they present an opportunity for smallholders to collectively engage and negotiate with other actors, thereby reducing transaction costs, enhancing smallholders' bargaining positions, and allowing smallholders and their partners to benefit from economies of scale.

- Public-private partnerships, such as those presented through the country case studies in Chapter 6 (Uganda, Tunisia and Egypt) are evidence of how partnerships can deliver economic empowerment to smallholders and other marginalized groups. While the impacts are impressive, the challenge is still how to scale up the business models used. This requires a fuller assessment, perhaps through independent entities, of what works well and what doesn't.

In a nutshell, the evidence and insights provided in this book can help developing countries – including IsDB's MCs – develop scalable, inclusive VCs. However, it is crucial for public sector investments and enabling policies to be in place, as a way of anchoring private sector participants in the VC development process and achieving sustainability. If we get this right, it will act as an effective lever for achieving IsDB's stated objective of 'Making Markets Work for Development'.

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