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INVESTING IN FARMERS

AGRICULTURE HUMAN CAPITAL INVESTMENT STRATEGIES



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INVESTING IN FARMERS

AGRICULTURE HUMAN CAPITAL

INVESTMENT STRATEGIES

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Foreword

Farmers increasingly face disruptive changes, including a rise in digital technologies, rigorous food safety requirements, shifting diets, climate change and global pandemics such as COVID-19.

Keeping pace with this rapidly changing environment requires farmers to have a stronger capacity to analyse, innovate and respond, while managing their own farm businesses. If we want to transform our global agri-food systems to be more productive, sustainable, inclusive and equitable, we need to invest in the people behind them, especially smallholder agricultural producers.

Compared with other “capitals” (e.g., physical, social or natural), human capital is an inalienable asset, tied to individuals. It cannot easily be eroded or destroyed like other capitals. It contributes to autonomy, empowerment and economic development, and is key to successful agriculture and rural development policies. However, scant attention has been paid to investing in agriculture human capital over the last decade or so.

In early 2020, the FAO Investment Centre partnered with the International Food Policy Research Institute (IFPRI), with support from the CGIAR Research Programme on Policies, Institutions and Markets (PIM) and the FAO Research and Extension Unit to examine agriculture human capital investments. The goal was to understand how farmers developed their human capital through a variety of initiatives.

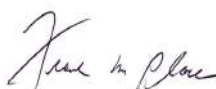
The study shows that investments in developing the human capital of smallholder producers resulted in new technical and business capacities and skills and empowered farmers. This led to increased incomes, yields and the inclusion of marginalised groups.

As we face future disruptions, challenges and opportunities, human capital needs will continue to change. We need greater investment in innovative and cost-effective programmes that strengthen and measure human capital development. This Directions in Investment report is aimed at stakeholders with an interest in developing agriculture human capital for smallholder producers, especially international financial institutions, other bilateral donors, governments, farmer organizations and private sector investors. We are grateful to all who contributed and hope that much will be gained from this global study.

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Abbreviations and acronyms

AHCI	Agriculture human capital investment
AgriSETA	The Agriculture Sector Education Training Authority of South Africa
COVID-19	Coronavirus disease 2019
DA	Development agent
FAO	Food and Agriculture Organization of the United Nations
FDP	Farm development plan
FEDEGAN	Colombian Cattle Growers Federation
FFA	Future Farmers of America
FFS	Farmer field school
GFRAS	Global Forum for Rural Advisory Services
ICT	Information and communication technologies
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFI	International financial institution
IFPRI	International Food Policy Research Institute
MELAD	Ministry of Environment, Lands and Agricultural Development (Kiribati)
NSmartAg	Nutrition-smart agriculture
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
PIM	CGIAR Research Program on Policies, Institutions, and Markets
PPF	Paulo Freire Project
PTC	Pastoralist training centre
SARs	South Africa Revenue Services
SETA	Sector Education and Training Authorities
SOA	School on Air

Executive summary

Investing in farmers – what is known as ‘agriculture human capital’ – is crucial to addressing challenges facing our global agri-food systems, from sustainably feeding the world’s growing population with food that is safe, healthy and nutritious to finding innovative solutions for more resilient and climate-smart agriculture. Investing in farmers is just as important as investing in infrastructure and other physical capital. Yet less than 3 percent of global agriculture development finance between 2015 and 2018 was invested specifically in strengthening the skills and capacities of agricultural producers.

How do you invest in building the human capital of agricultural producers? What factors make that investment successful? The Food and Agriculture Organization of the United Nations (FAO) and IFPRI, with support from PIM, sought answers to these and other questions in their joint global study. This report provides a synthesis of that study’s findings. It looks at recent trends, including shifts in financing and increased digitalisation. It also provides **six recommendations** to governments, international financial institutions (IFIs) and the private sector on investing in developing the human capital of agricultural producers, including women and youth.

Human capital, as an economic term, refers to assets that improve individual productivity. These include skills development, training and education, as well as public health and migration. They also include more abstract aspects such as self-esteem, empowerment, creativity, increased awareness and mindsets. In this report, the focus is on human capital in **agriculture** (including agriculture, fisheries and forestry activities) – that is, the skills and capabilities of small-scale agricultural producers to successfully manage farming enterprises. And it looks at **individual** human capital rather than that of organizations or groups, although these are important and linked to individual capital.

The research team carried out work in several stages, beginning with literature and dataset reviews to inform the current trends and typology development. This was followed by the collection of empirical data from published case studies on human capital development in Cameroon, Chile, Côte d’Ivoire, India, Indonesia, Kenya, Peru, Rwanda and the United States of America. An additional 11 cases developed as short text boxes – ranging from pastoralist training centres to the inclusion of indigenous communities – enriched the analysis, as did iterative engagement processes, key informant interviews, an economic evaluation of agricultural human capital investment and discussions with experts.

A global group of experts validated the typology, co-developed case study selection criteria and helped select the cases. The team presented the study’s framework during an initial global webinar, followed by a technical workshop and culminating with a “capstone” event to share the study’s findings and gather feedback from a global audience.

The cases studied – whether formal, system-wide approaches or more informal farmer-to-farmer models – saw the development of technical agricultural skills, functional and social skills, empowerment and mindset changes as well as managerial and business skills. Good agricultural practices were taken up, and producers acquired the skills for market analysis. Intermediaries such as community service providers had better communication skills. Other impacts found include increased incomes and yields, improved livelihoods in rural areas, greater inclusion of women and youth, social cohesion and social capital.

Looking to the future, **investment in agriculture human capital development needs to be significantly increased.** This can lead to good outcomes and impacts in the medium and long term, with many positive societal spill-overs like increased rural incomes, improved literacy and better food security and health.

Secondly, partnership and collaboration are crucial for greater impact first at the policy level, as investment is always constrained or enabled by the existing policy environment. Partnership is also critical for scaling up successful approaches and models.

The delivery method matters. Using an approach that is flexible and adapted to the needs of the target audience, whether a classroom or WhatsApp, is essential. As producers are learning, it is helpful to reinforce those skills through practical training or coaching. Also, the use of digital tools can amplify the investment by reaching greater numbers of people at lower costs.

Ensuring that no one is left behind is also important. When investing in or designing an agriculture human capital investment model, it is crucial to understand first the cultural, societal and economic factors limiting the participation of young, indigenous, remote, poor or female farmers.

Understanding what motivates farmers and getting them on board are also key to success. **Incentives for learning** should be rooted in the needs and aspirations of farmers, attainable and clearly communicated and explored with farmers in a participatory manner.

Finally, it is clear that **more research on agriculture human capital investment of smallholder producers** is needed. What are the long-term impacts of investing in farmers? Which types of agriculture human capital development have good returns on investment, both monetarily and societally? How is human capital developed among different target groups? These are just a few of the many questions remaining that merit greater analysis.





Introduction and rationale

Given that an estimated 690 million people suffer from hunger today (FAO, IFAD, UNICEF, WFP, and WHO, 2020) and the projected global population in 2050 will reach over 9.7 billion (United Nations, 2019), finding solutions for global food systems where food availability is adequate for all is an immense challenge. Agriculture human capital needs have changed in recent years, and must address a host of challenges, implying a greater focus on healthier and more nutritious food and more inclusive agri-food systems (FAO, IFAD, UNICEF, WFP, and WHO, 2020), while any increase in food supply must come primarily from environmentally sustainable productivity associated with knowledge-intensive agriculture practices.

Investments in agriculture, rural infrastructure, natural resource management and climate resilience are needed. Furthermore, investment in larger stocks of physical agriculture capital can lead to increased agriculture productivity, but it is not enough. There is an even stronger need to increase agriculture human capital investment (AHCI) to bring about greater innovation and resilience associated with knowledge-intensive agriculture practices. Increasing physical capital without simultaneously increasing human capital (or vice versa) is not likely to be effective.

Despite interventions from governments, IFIs, multilateral, regional and national development banks and non-governmental organizations (NGOs) aimed at improving human capital in agriculture, little systematisation or review has been done on such investments. More information is needed about ways to invest in human capital of agricultural producers and specific target groups such as women and youth. Promising initiatives should be identified and analysed to detect key elements of AHCI that may be useful in scaling up through greater investments.

An initiative by FAO and IFPRI with support from PIM contributed to addressing the challenges of how to invest in agriculture human capital development. This report synthesises the findings of a study focused on agriculture human capital of producers, including women and youth.

The purpose of these contributions is firstly, to improve the understanding of the field of AHCI and recent trends (the past five to ten years). Secondly, it seeks to provide evidence-based recommendations for future investment in the human capital of agricultural producers. With smallholder producers at the forefront of many societal, economic and climatic challenges, investing in their human capital becomes a way to meet those challenges.

The target audience for the report is a wide range of stakeholders with an interest in developing agriculture human capital for smallholder producers. The main target audience, however, is funders: the FAO Investment Centre's partner IFIs, other bilateral funders, governments, farmer organizations and private sector investors. Such investors will be interested in viewing the recommendations for strengthening producer agriculture human capital. Implementers will want to know more about the success factors for developing agriculture human capital. Educational institutions will want to see the types of skills that are important and how best to build them. Finally, researchers will be interested in seeing the typology, results and suggestions for further research.

Following this introduction, we provide background from the literature on AHCI for productivity and poverty reduction, as well as broader areas in the wake of disruptive change in Chapter 1. In Chapter 2 we discuss the current state of AHCI and provide data on trends. Chapter 3 covers the conceptual framework and methodology, and Chapter 4 presents the typology of agriculture human capital investment. In Chapter 5 we present findings from the study in terms of outcomes and impacts of AHCI. In Chapter 6 we discuss what makes the human capital investment models successful, and in Chapter 7 we present recommendations.



Chapter 1

Background

The meaning of human capital can vary. From an economic perspective, for instance, investment in human capital focuses on national productivity and poverty reduction (Box 1). However, human capital may also be a goal in and of itself. Human capital, in the form of empowerment and agency, has both individual and societal benefits that are desirable. As with the thinking of rights-based approaches (Uvin, 2002) or “conscientisation” (the view that rural people must be empowered to make their own decisions) (Freire, 2005), such transformation is valuable regardless of the economic benefits. Box 1 provides an operational definition of AHCI for this study. We have not included nutrition, migration or any other broader human capital elements in the typology and cases. However, we explore examples of the nutrition element in Box 2.

In this section we first discuss economic goals related to productivity and poverty reduction, and subsequently broader goals such as empowerment and resilience. We then present current discussions on agriculture human capital in the context of disruptive change.

WHAT IS HUMAN CAPITAL AND AGRICULTURE HUMAN CAPITAL INVESTMENT?

Human capital is the stock of habits, knowledge, skills, social and personality attributes (including creativity) embodied in the ability to perform labour so as to produce economic value (Goldin, 2014). We operationally define it for this work as **the skills and capabilities of small-scale agricultural producers to successfully manage farming enterprises (producers include farmers, pastoralists and fisherfolk)**. The focus of this report is on human capital in agriculture, and individual human capital rather than that of organizations or other group-based entities. We also include more abstract aspects, such as self-esteem, empowerment, creativity, increased awareness and mindsets in our understanding of human capital.

Hence, when referring to **AHCI** we mean investment in the skills and capabilities of agricultural producers. Throughout the report, we may also refer to AHCI as farmer learning, human capital development or skills development.

1.1. AGRICULTURE HUMAN CAPITAL AS AN INVESTMENT IN PRODUCTIVITY AND POVERTY REDUCTION

Since the early 1960s, economists have mainly written about the role of human capital's contribution to increased personal income and productivity growth, as well as national income and productivity (Mincer, 1958; Schultz, 1961; Becker, 1964). In the case of human and social capital, research has focused on strong returns on investment in the areas of studies, extension and education (Huffman, 1974; OECD, 1988; Bosma *et al.*, 2004). Empirical evidence suggests that internal rates of return to public spending in agricultural research and extension are high (Alston *et al.*, 2000). For example, the internal rate of return across Latin American studies averages at 53 percent, which is close to the average for developing countries (60 percent). Indeed, returns to public spending in terms of agriculture productivity and poverty reduction have been shown to generally be the highest for agriculture research and development and education (FAO, 2012).

Despite these research findings, however, little is known about how to effectively measure human capital in agriculture, or how to understand its economic value. Recent World Bank reports from the Human Capital Index provide some insight into measuring human capital with regard to education and health components (World Bank, 2018; World Bank, 2020a). As this study unfolded, we recognised the need to better understand the economic evaluation of agriculture human capital investment in investment projects. Thus, a technical working paper was developed simultaneously to further contribute to the knowledge base on AHCI (McNamara, 2020). The paper reviewed economic evaluations of human capital, described current practices and provided lessons for development programme designers and funding partners.

1.2. AGRICULTURE HUMAN CAPITAL AS AN INVESTMENT IN BROADER AREAS

Investment in agriculture human capital provide substantial long-term economic returns, such as enhanced productivity and reduced poverty (Aart, 2019). However, other crucial benefits can accrue from investing in human capital – resilience, creativity, innovation, confidence, quality of life, empowerment, gender awareness, critical thinking and stronger cohesion in societies (Christoplos, Sandison and Chipeta, 2012; Friis-Hansen, 2004; Friis-Hansen and Duveskog, 2012; van den Berg *et al.*, 2020; World Bank, 2020b). These benefits are related to more intangible factors such as wellbeing and livelihoods and cannot easily be monetised as income and productivity. These broader areas have relationships, though often nebulous, to economic benefits, and are also worth investing in, even if they prove difficult to show returns on investment (Friis-Hansen and Duveskog, 2012).

Empowerment, for instance, is a potential route to wellbeing (Friis-Hansen and Duveskog, 2012). According to Friis-Hansen (2004) empowerment is an advanced type of participation whereby producers make the decisions themselves, rather than adhere to recommendations of others. Friis-Hansen and Duveskog (2012) state that empowerment may be more important than other technical solutions in agricultural development. A meta-evaluation of farmer field schools (FFS) in East Africa showed a number of impacts ranging from food security and poverty to natural resource management, gender dynamics and wellbeing (FAO, 2018).

Good health is generally considered to be an important component of human capital. Health could even be described as a reinforcing type of human capital, as it may aid learning abilities leading to new capabilities or knowledge. Nutrition thereby becomes interrelated with human capital as an input to good health. Nutritional diets, however, require the knowledge of and ability to produce, preserve and otherwise choose nutritious foods, which makes it a human capital of its own. Therefore, investing in farmers' skill sets around nutrition can have a multi-level impact on different forms of human capital. Box 2 presents two cases of such investments. Measuring economic returns on investment to an agriculture human capital project or programme may not fully capture all the outcomes and impacts, and the human capital contributions to general wellbeing, improved livelihoods and economic outcomes.

NUTRITION AS AN ELEMENT OF HUMAN CAPITAL

We focus on the skills and capabilities of agricultural producers in this report, but human capital investments do include human health and nutrition improvements, as these two experiences demonstrate.

IFAD experience with the Outer Island Food and Water Project in Kiribati

This project focuses on community development to achieve food and nutrition security. The approach builds on self-reliance and social capital of supported communities by providing households the means to plan and the technical skills, particularly in the areas of access to clean water and household food production (home gardening and poultry). Through social and behaviour change communication and nutrition education, the project addresses the low awareness of nutrition issues and positively influences the consumption of nutritious food. Rainwater harvesting secures access to a basic minimum quantity of clean drinking water to reduce the incidence of waterborne diseases.

A local NGO trained island and community field officers to work with representatives of 2000 households and 43 communities, to analyse constraints and opportunities and identify solutions that respond to the environmental challenges they face. The International Fund for Agricultural Development (IFAD) financing is provided to the Ministry of Environment, Lands and Agricultural Development (MELAD). In addition, the Project Coordination Unit, based in MELAD, provides funding to the NGO to implement selected project components. The participating households contribute in kind (time and material). Relevant ministries such as internal affairs and health contribute by providing trainings in community nutrition.

The project helped 11 275 participants and provided communities with the skills to identify community issues and priority interventions. Organisational capacities were established through Community Committees and Water User Groups, which formulated 44 Community Agriculture and Water Development Plans for the four outer islands with a large participation of women and youth. The formulation process improved social cohesiveness and awareness within rural communities. Home gardening and poultry activities contribute to increased food availability and increased proportion of calories and nutrients from local food crops. Additionally, 2135 home gardens were set up, and an 80 percent reduction in cases of diarrhoea and dysentery, as well as a 90 percent improvement in terms of access to clean water were reported by supported households.

More information: <https://www.ifad.org/en/web/operations/project/id/1100001708>
<https://www.ifad.org/en/web/latest/story/asset/41245318>

World Bank Experience with Nutrition Smart Agriculture

Nutrition-smart agriculture (NSmartAg) is a set of agriculture and agro-processing technologies and practices that contributes to improving nutrition and increasing farm and agribusiness-level productivity and revenue. Existing NSmartAg technologies and practices are available to farmers and agribusinesses, but their adoption has been incipient. Mainstreaming NSmartAg into programmes will require integrating

NSmartAg principles into farmer agriculture input and technology adoption programmes, as well as training of agricultural advisory and extension services in NSmartAg solutions, such as post-harvest technology and product handling, including for aflatoxin prevention and control. This integration can be achieved also by adapting financial instruments embedded in development operations for agri-micro, small, and medium enterprises (such as agrifinance and matching grants) that could encourage the adoption of NSmartAg practices. For example, the World Bank-supported National Agriculture Development Program (under preparation) in the Democratic Republic of Congo is expected to finance direct smallholder farmer and agribusiness support for the adoption of NSmartAg practices and technologies (including production of fruits, vegetables, and biofortified crops, and food processing approaches such as nutrient-rich flour, egg production and packaging, meat processing, and fish conservation and packaging).

NSmartAg focuses on the primary production and agri-food processing and distribution sides of the food value chain, which is where farmers and agribusinesses decide 'what' and 'how' to produce and where the agriculture sector designs and implements actions and policies to improve nutrition.

More information: <https://www.worldbank.org/en/topic/agriculture/publication/nutrition-smart-agriculture-when-good-nutrition-is-good-business>

1.3. AGRICULTURE HUMAN CAPITAL IN THE WAKE OF DISRUPTIVE CHANGES AND DEMOGRAPHIC SHIFTS

Disruptive changes represent challenges and opportunities to smallholder farming operations. Indeed, disruptive changes in agriculture combined with new ways of organising, are increasing the need for continuous improvements of human capital for smallholders. Some key disruptions include: climate change; the COVID-19 crisis; digital agriculture; floods and droughts; advanced technology such as soil sensors; higher standards of sanitation and traceability (including blockchains); food quality; new forms of producer associations; local food production and geographic indicators; and transboundary diseases.

Reskilling and upskilling programmes must be part of the response to address the needs of agricultural workers facing such disruptions, especially those who cannot return to school or university (World Bank, 2019). In the agriculture sector, there is a range of formal and non-formal adult education options available. Nevertheless, to make a difference in the current context of disruptions, more investments and better evaluations are needed to increase the effectiveness of adult education and training programmes.

Having understood the literature on AHCI and the societal and economic role of human capital amongst small-scale farmers, we will now investigate the current state of investment in AHCI.





Chapter 2

Trends and financing in agriculture human capital development

While the case studies and boxes provide insights into models of investment in agriculture human capital, this chapter presents the broader trends in AHCI in producers. We examine investment topics and trends by key IFIs. We look at shifts and trends in financing and topics in development assistance in the past five to ten years.

2.1. LIMITATIONS TO HUMAN CAPITAL DATA IN INTERNATIONAL DEVELOPMENT FINANCE

Before presenting data on trends, we have noted the limitations inherent to the concept of AHCI in development assistance. First, unlike many other agriculture development project outputs, such as irrigation infrastructure or access to markets, development of human capital is less tangible and defined, if at all, in ways that differ from project to project. Project components investing in the human capital of farmers may be referred to as training, extension, advisory services, certification, technical assistance, technology transfer, awareness building, agricultural entrepreneurship and knowledge exchange, to name a few. Even projects with capacity strengthening components may be focusing on the capacities of other members of the agricultural community (e.g., extension staff, project managers) rather than that of producers. The inconsistent labelling of human capital in the objective statements of development projects means that searches of project databases are not necessarily thorough.

Second, human capital improvement is rarely the primary objective of an agriculture development project. Agriculture human capital is often invested in as a means to an end rather than an end in itself. For instance, a project may aim to increase productivity and income among smallholder producers, and gaining skills through training is one way to achieve those objectives. Therefore, since projects are often named after their primary objectives, estimating AHCI based on searches of project titles poses limitations, and searching through all available project documents from all international financial institutions to find different types of human capital investment is prohibitive, due to the vast amount of data.

Finally, human capital development is often one of several components in a project; or in many instances, a sub-component. Therefore, the proportion of project funding that specifically targets human capital elements is frequently inexplicit.

Due to these limitations, caution should be used while drawing inferences or comprehensive conclusions from the trends and data presented in this chapter. They do not represent a census of IFI investment in human capital, but are illustrative examples that provide a general picture of the current status of investment.

2.2. TRENDS IN AGRICULTURE HUMAN CAPITAL DEVELOPMENT FINANCING

In order to grasp the concept of global investment in agriculture human capital development, we take a closer look at development finance flows and proportions channelled into AHCI. It should be noted that this analysis includes bilateral and multilateral monetary flows between countries but not domestic investments through national budgets. According to the Organisation for Economic Co-operation and Development (OECD) data, more than USD 1 trillion of development finance was dispersed between 2015-2018 (Atteridge, Savvidou and Meintrup, 2019). From this amount, 4.3 percent, or USD 44.2 billion, targeted the agricultural, forestry and fishing sector. As specified by the categorisations made by the Stockholm Environment Institute (Atteridge, Savvidou and Meintrup, 2019), 2.4 percent of the USD 44.2 billion went into the subsectors of agriculture education/training and agriculture extension. This means that USD 1.8 billion or less than 0.2 percent of total development finance between 2015 and 2018 specifically targeted the development of agriculture human capital. Figure 1 illustrates these proportions, with the subcategories targeting agriculture human capital development highlighted in blue.

Given that 3 percent of global agriculture-designated development finance (agriculture, forestry and fishing; see Figure 1) is specifically invested in raising the skills and capacities of farmers themselves, using human capital as a tool in agricultural development is prioritised to a much lesser extent than, for instance, infrastructural or administrative components – at least monetarily. Agricultural (farm) development, being the largest category, takes up 23.3 percent, while 15.8 percent targets agricultural policy and administrative management, which includes agricultural sector policy, planning and programmes; aid to agricultural ministries; institution capacity building and advice (Atteridge, Savvidou and Meintrup, 2019).

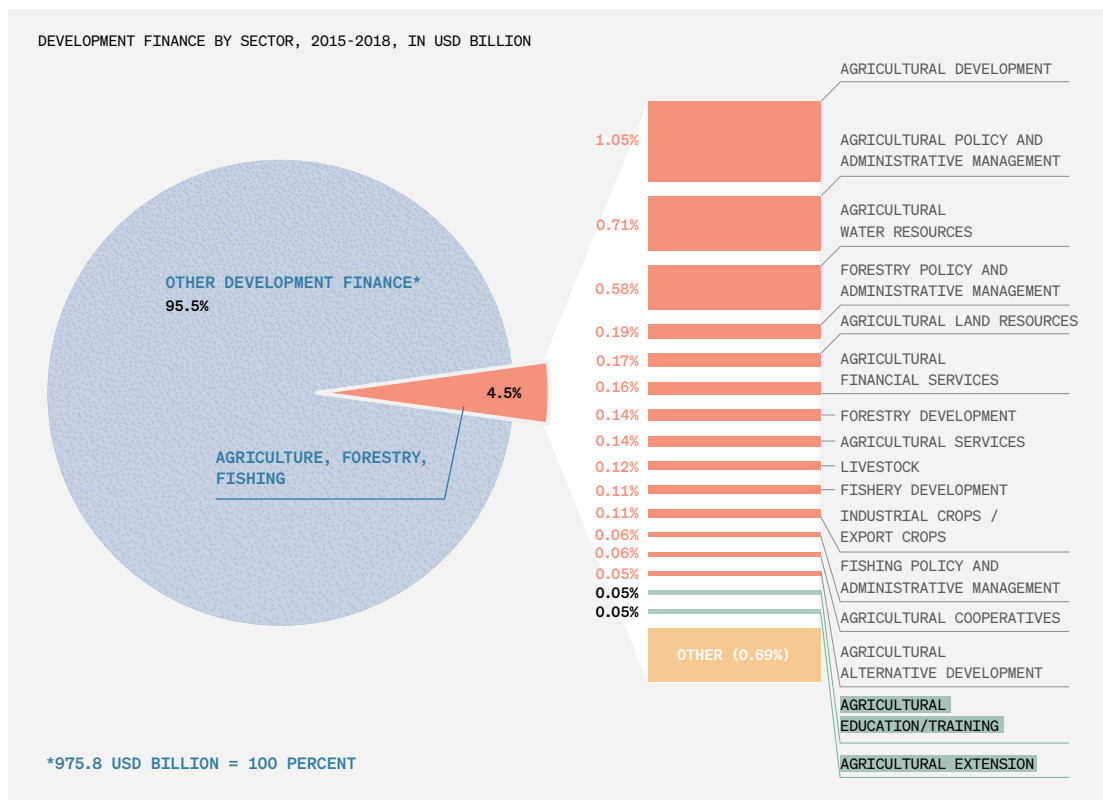


Figure 1
International development finance by sector, 2015-2018, in USD billion

SOURCE: OECD Data, Atteridge, Savvidou and Meintrup. 2019.

2.3. EXAMPLES OF INTERNATIONAL FINANCIAL INSTITUTION INVESTMENT

To gain more insights into AHCI by international financial institutions, the authors researched two IFI project databases between the years 2015-2020. The World Bank Group channelled the largest sums of multilateral development finance worldwide, while IFAD financed agricultural projects. The authors examined the role played by AHCI in the investment portfolios of these two IFIs.

Table 1 presents the commitment of loans and grants from these two IFIs mainly between 2015-2018. It allows for a comparison between the total sum of commitments, those targeting projects within the agriculture sector, and those targeting the agricultural extension and training subsectors. Table 1 does not compare one IFI to another, but rather the relative commitments by sectors and categories within the selected IFI. IFAD invests in agriculture and associated rural development, while the World Bank Group portfolio is broader. The volume of investments channelled within the AHCI subsectors should not be confused with the sum that is invested in projects that have an agriculture human capital development component. Here, the total amount invested in a certain project is often higher than the sum directly and specifically budgeted for farmer learning activities.

Table 1**Overview of loan/grant commitments by World Bank and IFAD 2015-2018**

Loan/grant commitments in USD billion	World Bank Group	IFAD
Total, all sectors	163.2	4.6
Within agriculture sector	11.7	3.0
Within agricultural extension and agricultural education/training sub-sectors (AHCI)	0.5	0.8
Within projects with AHCI component	3.8*	2.1
Agriculture sector as percentage of total	7.2	66
Agricultural extension and agricultural education/training sub-sectors (AHCI) as percentage of total	0.3	17
Projects with AHCI component as percentage of total	2.3	46

*Funding of projects between 2015 and 2020

SOURCES: IFAD 2019, World Bank 2020, Atteridge, Savvidou and Meintrup, 2019.

Table 1 shows that from World Bank funding during this period, agricultural development projects constituted 7.2 of total project funding (other sectors included energy, transportation, education etc.). Funding to projects with a subcomponent of developing farmer human capital constituted 2.3 percent, while projects entirely categorised as agriculture human capital development projects received 0.3 percent of total World Bank funding. For IFAD, the percentage of total funding channelled towards agricultural projects was larger – 66 percent – while 46 percent of total IFAD funding had an AHCI subcomponent. Again, we see that funding of projects entirely focused on developing farmer human capital was lower, at 17 percent of total IFAD project funding between 2015-2018. Thus, not all agricultural projects funded by the World Bank and IFAD included farmer human capital development components and even fewer were devoted to AHCI in their entirety.

Table 2 presents findings from both a quantitative and qualitative analysis of project databases. The extent to which a project component must address human capital development to be categorised as significant has been assessed here by the authors individually through content analysis. The remaining values in the table are likewise based on content analysis of project documents.

Table 2 shows that 57 of the 347 agricultural projects supported by the World Bank between 2015 and 2018 are estimated to have had a component that significantly targeted the development of farmer skills. For IFAD, this ratio was 86 out of 161 total agricultural projects. While OECD data categorised only 17 IFAD agricultural projects within the agriculture and human capital sub-sector, through project content analysis the authors found many more projects (86) with a component focused on farmer learning. This may imply that projects can be categorised into other sub-sector by OECD standards (e.g. livestock) and still have a strong human capital component, such as training farmers in livestock care.

Table 2

World Bank and IFAD agricultural projects with agriculture human capital investment components 2015-2018

Project characteristics	World Bank Group	IFAD (2015-2018)
Total projects within agriculture sector (OECD classification)	347*	161*
Projects within agricultural extension and agricultural education/training sub-sectors (AHCI) (OECD classification)	63*	17*
Projects with a significant AHCI component, as assessed via content analysis	57	86
Most common delivery methods of AHCI	Technical assistance, training activities.	Training, FFS technical assistance.
Most common training content in AHCI components	Increasing productivity, commercialisation/ market access, sustainability/ resilience.	Increasing productivity, adapting to climate change, improving agricultural practices.
Projects with significant AHCI component and with strong focus on women, youth, and indigenous producers	12	8
Locations of projects with AHCI components		
Sub-Saharan Africa	20	37
Southern Asia	14	14
Latin America and the Caribbean	11	15
Eastern and Central Asia	6	5
Western Asia	2	2
Southeast Asia, Melanesia and Polynesia	2	11
Northern Africa	1	2
Eastern Europe	1	0

NOTE: All data are from project document content analysis unless otherwise noted.

*Numbers are from analysis of OECD data (Atteridge, Savvidou and Meintrup, 2019), counting projects where USD committed > 0. Dataset may be subject to data discrepancies.

SOURCES: IFAD 2020, World Bank 2020, Atteridge, Savvidou and Meintrup, 2019.

Further analysis of the World Bank Group project database show that prior to year 2000 there were many bank-funded projects entirely focused on agricultural extension. Since then, the trend has been to incorporate human capital development as a component into agricultural development projects that funded a broader range of interventions in infrastructure, value chains, market access, and climate change adaptations.

This may be due to trends of more holistic approaches that bundle topics such as marketing, value chains, education and empowerment components of capacity development.

This integration of human capital components may better allow improvements in producer human capital to materialise into improved livelihoods, and the broader scope to include issues such as market access, value chain integration or access to credit are well justified. Several case studies bear this out (Chapter 5). Given the dynamic context today, with digitalisation, globalisation, pluralism and climate change, technologies and market opportunities can help realise high payoffs to agriculture human capital investment (McNamara, 2020).

2.4. TRENDS IN AGRICULTURE HUMAN CAPITAL INVESTMENT TOPICS

Having presented some general financial trends in AHCI, we will now look at some general trends regarding topics in agriculture human capital investment. We focus on how investment in producer human capital has developed over the past five to ten years. Topics also include models of human capital development that IFIs have invested in, the choice of target group, delivery methods, and skillset focus (see Chapter 3.1 for model definition).

In addition to a review of literature for thematic trends in AHCI topics over the past five to ten years, the authors obtained perspectives from several experts who had worked for international financial institutions for several decades and were familiar with human capital investment programmes. We obtained information through an online survey, email exchanges and key informant interviews. Thus, this section is based on qualitative data.

Some trends were as recent as the start of the COVID-19 crisis. A male senior manager at one IFI stated:



We can't talk about trends in agricultural human capital investment today without talking about COVID-19. It has had a profound impact on how we manage and implement investments at (our IFI).

They saw a big shift to digitalisation of extension services, with new and repurposed funding, as a result of the crisis.



I think everywhere, [digital tools are] probably the most prominent topic. If you get a discussion on extension in any setting it's like it's going to be some version of digital tools. That's probably the hottest topic at the moment.

Continuing on to digitalisation, a respondent stated that the number of digital tools and applications being used in IFI investment were growing, and precision agriculture also showed promise. Cell phones allowing farmers to tap into varied sources of information on demand were an important tool. However, according to one male expert:



A true transformational impact of ICT [information and communication technologies] on small farm human capital probably still awaits innovations in application of ICT to sustainable [extension and advisory services] models.

Of course, this would require digital literacy and other capacities to use the tools. However, one male key respondent stated that while:



ICT applications have received a lot of attention with a lot of pilot projects... most country extension and advisory service programmes continue to rely on proven traditional extension approaches.

Along with digital approaches, there is a need to focus on facilitating factors – such as infrastructure connectivity and access to rural energy including renewable energy, according to one expert. This also implies engagement with a wider range of partners in IFI projects. For instance, IFAD works with technical companies and mobile phone companies in projects working with youth through incubators.

A traditional AHCI approach is the FFS. FFSs are located in over 90 countries and include far-ranging topics such as climate change, seaweed production and post-disaster (Pratt, 2020). Farmer business schools strengthen farmer capacities for business and marketing skills (Tham-Agyekum *et al.*, 2021). A key topic of FFS today is institutionalisation (Chuluunbaatar and Yoo, 2015). According to Pratt (2020) this means formalising and integrating them into agricultural policy and rural development programmes. The Rwandan national extension system has institutionalised the approach (see Chapter 5).

Another trend is reaching youth, particularly through agribusiness opportunities. Youth (those between 15-24 years of age) make up a significant proportion of the global population (1.2 billion or 16 percent [United Nations, 2019]). A recent study showcased successful models of engaging youth in extension through enhancing their human capital, training them as agripreneurs, village extension agents, or paraprofessionals (Franzel *et al.*, 2020). Respondents confirmed this trend saying that “*there is a lot of enthusiasm over youth programmes*” and “*another focus of [the IFI] is youth agribusiness.*”

Finally, another trend in IFI investment in agriculture human capital saw the involvement of private sector actors in the delivery and design of AHCI models.



There has been a continuing trend emphasising private [extension and advisory services] which has continued over the past ten years. Countries have tried to facilitate this with new extension strategies and mechanisms for coordinating and facilitating non-governmental [extension and advisory services]. I'm not sure that these have been greatly successful.

[male IFI expert]

This study reviewed several cases where involvement of private sector actors has shown promise. Private companies promoting the professionalism of farmer cooperatives are covered in the West and Central Africa case. The Indonesia case highlights a public-private-producer partnership in a national farmer extension programme. In the Chile case, a government programme linked producers to buyers who provided them skills for market-oriented production (see Chapter 5).

This section looks at investment in human capital in agriculture, examining trends in financing and thematic areas by IFIs over the past five to ten years. We now look at the conceptual framework and methodology for the study.



Chapter 3

Conceptual framework and methodology

We conducted the research in several stages, beginning with literature and dataset reviews to inform the current trends and typology development, followed by collection of empirical data using case studies of human capital development across the typology (described in Chapter 4). The analysis was enriched by a set of examples presented in boxes, and by iterative engagement processes and key informant interviews at global and national levels to gain wide perspectives of issues and for validation of concepts, approaches and outcomes. Before presenting the methodology, we explain the conceptual framework and the theory of change underlying the analysis.

3.1. CONCEPTUAL FRAMEWORK AND THEORY OF CHANGE

To provide a better understanding of AHCI and give recommendations for future investment, researchers undertook a number of activities, including analysing models of agriculture human capital development. It is therefore helpful to operationally define what we mean by an AHCI model and its scope. A model of AHCI enables the development of human capital and has different components (Figure 2). These model components are not always strictly separated and can overlap. The individual components can be described as:

- a model has one, often multiple, defined **target groups** whose human capital a AHCI model is designed to enhance. This target group could be farmers from a geographic area, or specific types of farmers (e.g. horticulture, livestock farmers);
- the target group is reached through direct contact with **individual skills providers**. These providers facilitate and support the learning process by teaching, advising or demonstrating different skills;
- a model is the **delivery method** or how and where learning takes place. These can include demonstration plots, FFSs or on-the-job training. See Figure 7 for a typology of different types of delivery methods;
- a model has a more or less defined objective as to which **type(s) of human capital** should be developed among the target group. In this study, we have broadly classified types of human capital under a) technical agricultural skills; b) functional and social skills – including empowerment; and c) managerial and business skills (see Chapter 5.3);
- the **implementer** of an AHCI model, is the given organization(s) or government(s) behind and responsible for overall implementation, for instance a national programme or project activity;
- a model has one or more **funders**.

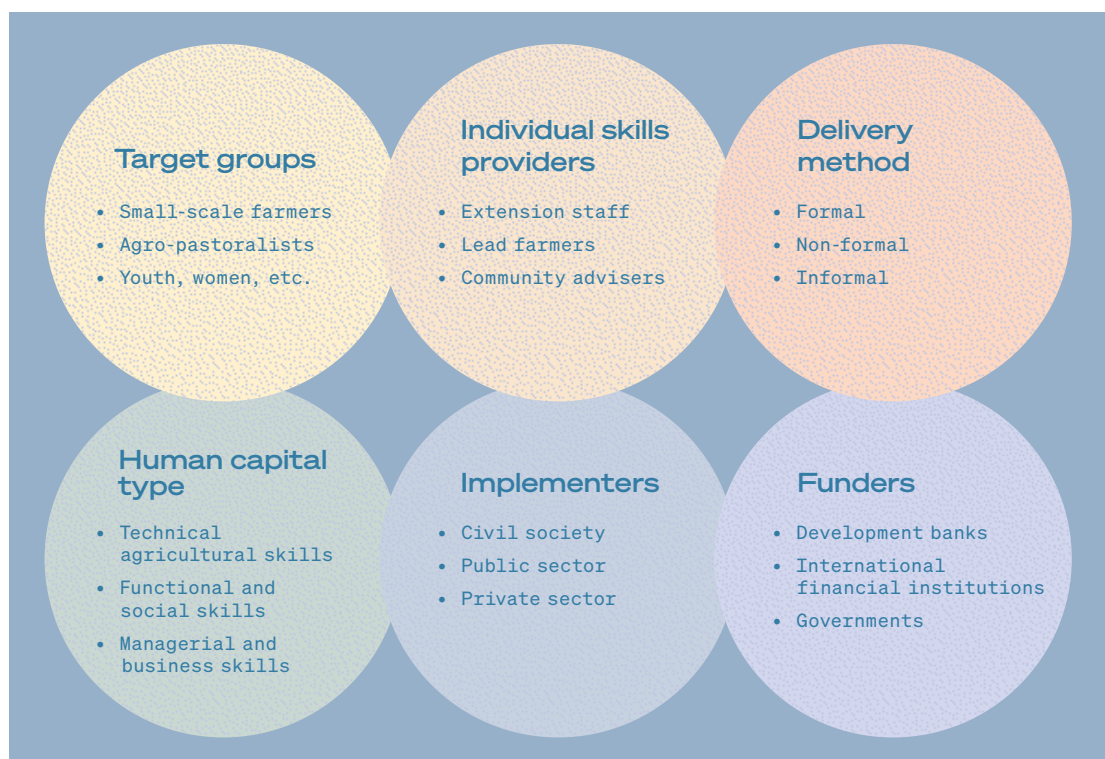


Figure 2
Components of a model of agriculture human capital investment

SOURCE: Authors' own elaboration.

Having presented how we define models of AHCI, we must understand a model's placement in the wider context. An AHCI model constitutes an *element* of a project, initiative, development intervention, programme or a national policy. These models mostly do not stand alone, but are often a large or small component of interventions. Consequently, we distinguish between a certain **project** and its component that promotes farmer learning; the **model** (Figure 3). An AHCI model is thus an activity or intervention that strengthens producer capital.

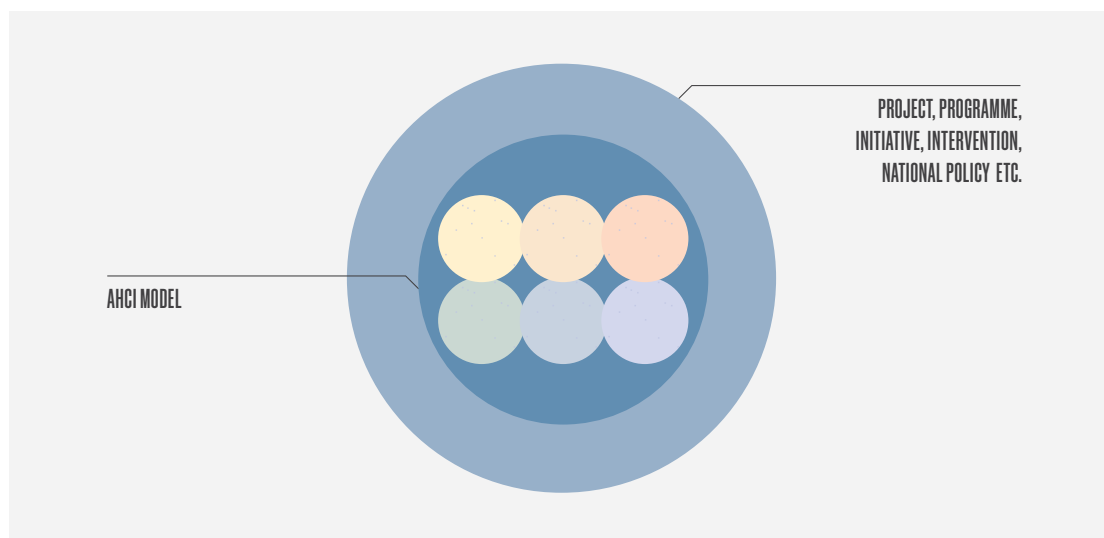


Figure 3
Contextualisation of an agriculture human capital model

SOURCE: Authors' own elaboration.

The theory of change in human capital development of producers is presented in Figure 4. Activities associated with the implementation of a given AHCI model such as trainings or workshops constitute **inputs**. These activities in turn generate **outputs**, changes in the stock of human capital among the target group. Outputs can result in **outcomes**, that is, behaviour change among the target group as a result of the human capital developed. For instance, a farmer having gained the skill of intercropping might start doing so on her field. Lastly, **impacts** are defined as the wider socioeconomic effects resulting from the change in behaviour, which could entail changes in productivity and incomes, but also more intangible impacts such as changes in health and wellbeing.

The aim of this study was to focus on the first link between input and output, as illustrated by the orange highlight; namely how models of AHCI develop different types of human capital. We also include evidence of outcomes in the analysis.

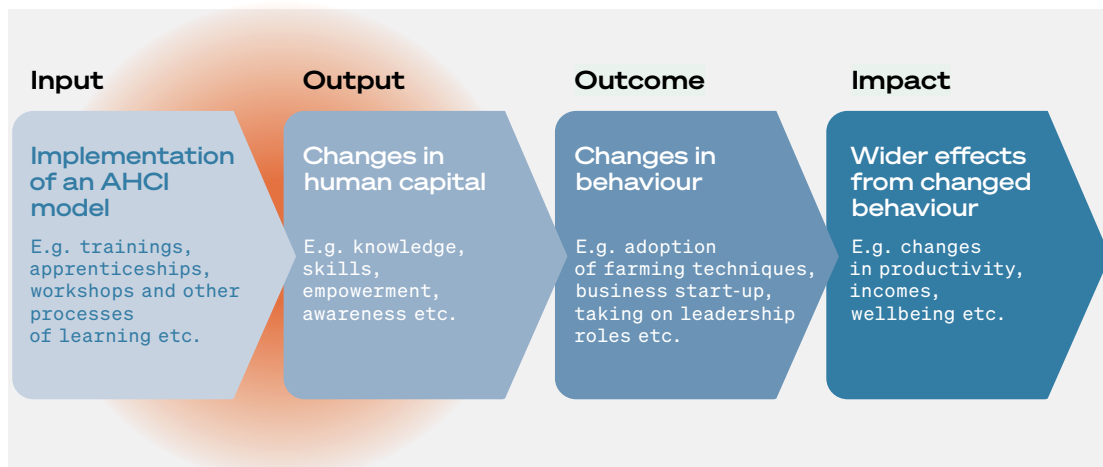


Figure 4
Theory of change of agriculture human capital investment

SOURCE: Authors' own elaboration.

This brings us to the specific question that this study aimed to answer:

How is a model of agriculture human capital investment successful in building human capital of agricultural producers, and what can future investments learn from it?

We define a model as “successful” when it helps generate and develop skills, knowledge, capabilities and awareness among agricultural producers and, rather than simply transferring information, technology, or assets, it empowers farmers with full ownership of the newly acquired human capital.

With the conceptual framework and research question presented, we now present the study methodology.

3.2. LITERATURE REVIEW AND STAKEHOLDER ENGAGEMENT

First, a literature review was conducted on agriculture human capital theory and investment to inform the typology, identify cases for analysis and understand current investment. The researchers searched academic journals and international financial institution websites for keywords (agriculture human capital investment, training, capacity building, extension, education, capacity development, skills development, learning).

For investment trends, website project databases of two major international finance institutions, the World Bank and IFAD, were reviewed to identify investments in projects with agricultural human capital components and to understand current investment in agriculture human capital (Chapter 2). With a date specification of 2015-2020, the search words ‘agriculture training’ and ‘agriculture capacity building’ were estimated to offer the most fitting search criteria. Out of 221 search hits, 72 were estimated to have a human capital component. Some limitations do apply, as online documents have been unavailable for verification on certain projects.

During the literature review process, we found many projects with limited focus on agriculture human capital development and very few with agriculture human capital development as a major component. We therefore held conversations with key informants for additional insights on AHCI trends. Using a snowball approach, we contacted technical experts (FAO Service Chiefs and staff from World Bank, IFAD, African Development Bank, Inter-American Development Bank) to solicit information on promising initiatives to supplement those identified in the literature review process.

An additional 11 examples obtained from expert advisers and partner IFIs are provided as short text boxes to supplement the in-depth cases, particularly to fill any gaps in the typology. A parallel process investigating the measurement of agriculture human capital development complemented the work by developing a review paper examining literature on agriculture human capital investment with a focus on economic rates of return (McNamara, 2020). The iterative, participatory approach to the study included engagement with experts and stakeholders throughout the process. A webinar presented the study framework to a wide audience before beginning the work. A technical workshop was held to discuss the McNamara (2020) review paper. A final “capstone” event presented the findings for discussion and further feedback.

3.3. CASE STUDY APPROACH AND SELECTION

To conduct in-depth analysis of current agriculture human capital investments, as well as provide recommendations for investors and agricultural extension practitioners, we selected a number of promising initiatives of AHCI as in-depth case studies. These provided insight into investment in agriculture human capital of agricultural producers and what factors accounted for the success of the models.

The case study approach helped to capture detailed insights into initiatives that show promise for future investments in agriculture human capital. Case study approaches are valuable for exploring complex phenomena from a diversity of perspectives and in situations where context is a salient factor. As such, case studies are a rigorous and appropriate methodology to describe the complex ways in which human capital can be developed in agricultural contexts. For this study, the unit of analysis was the model of human capital development agricultural producers. The model is operationally defined in Chapter 3.1. The case study selection process was done using six workshop sessions attended by 25–30 multi-sectoral technical experts. Input from these workshops helped determine which nine case studies were selected, as well as the **criteria** for selection:

1. **documentation of process and impact:** evidence of success; sufficient documentation and implementation details;
2. **scalability, replicability and institutionalisation:** implementation is multi-sectoral and may work for different value chains; including institutionalisation beyond government entities;
3. **inclusion and empowerment:** the approach works for different groups, particularly the marginalised, and empowers participants;
4. **holistic integration:** the approach goes beyond technology transfer and includes market, value chain or entrepreneurship; and,
5. **sustainability:** the approach will persist over time with regard to funding, ownership, and organisational structure, and has appropriate incentive mechanisms.

We purposively selected cases to showcase different AHCI models across the typology and to ensure broad geographic representation (Figure 5). In addition, boxes throughout the report help to illustrate gaps in the typology that the cases did not cover, or other interesting elements we wanted to highlight.

3.4. CASE STUDY METHODOLOGY

Following the identification of case studies, country-level researchers were sought with a deep knowledge of model and appropriate expertise and abilities. Each case study team conducted literature review and document analysis using existing survey data, monitoring and evaluation reports, impact evaluations, and project documentation. Each team collected primary qualitative data using key informant interviews and focus groups, mainly virtual. Semi-structured interview guides ensured comparability across studies; many were lightly modified or translated. Primary data collection methods were determined by accessibility and safety of respondents during the COVID-19 pandemic.

The individual methodologies are described in detail in the case study reports (see Table 3). Data were collected between June and October 2020. The International Food Policy Research Institute Institutional Review Board for Social, Behavioural, and Educational Research approved the methods of data collection (IRB Approval Number: DSGD-20-0621M).

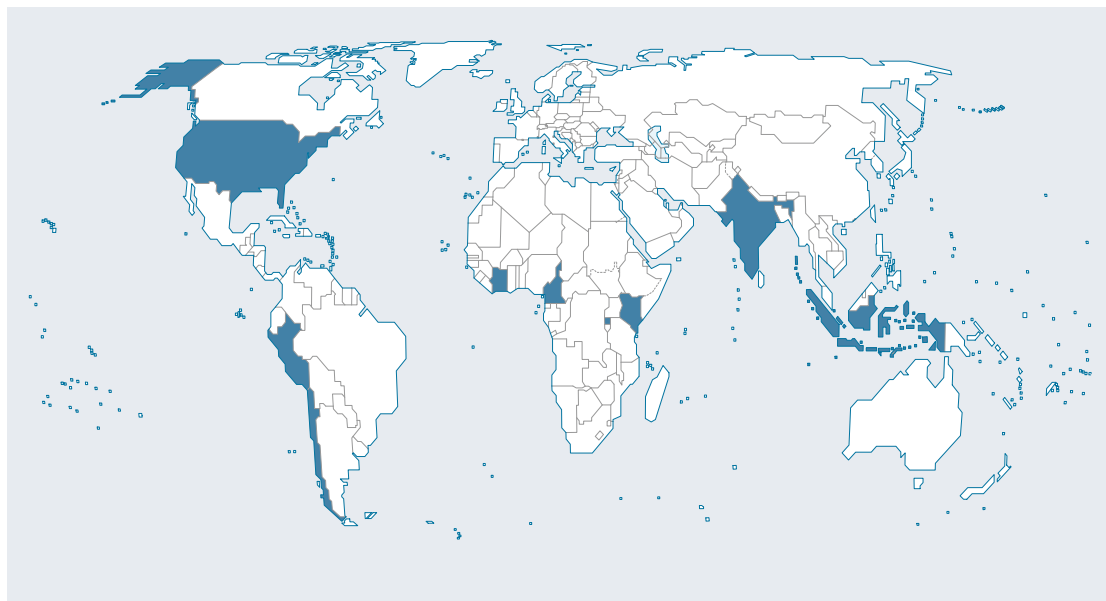


Figure 5
Country case studies

NOTE: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

SOURCE: Map generated by <https://www.un.org/geospatial/mapsgeo/generalmaps>



Chapter 4

Typology of agriculture human capital investment delivery

Reviewing existing literature helped us understand how different types of AHCI are delivered; this in turn helped us to develop a typology of agriculture human capital development delivery methods.

Agriculture human capital is delivered in many ways through various delivery mechanisms. Traditionally, it is done face-to-face, often in a group setting like a classroom or farmer's field, or one-on-one at the farm or extension office. However, it can be delivered through vocational technical training institutes, agriculture certification programmes, apprenticeships, public extension, private extension, training by companies, farmer exchanges, self-directed learner groups, FFS, farmer to farmer and community participation models (including Dimitra Clubs¹), digital tools, and WhatsApp communities (Box 7). All of these formal and non-formal agriculture human capital development models represent public and private options as well as farmers' alternatives to improve their own capacity to innovate.

There is, however, no comprehensive typology of models for delivering agriculture human capital development. Figure 6 thus represents the authors' understanding of types of human capital in agriculture delivery methods focused on both adult and youth learning and skills development. The "youth" category is broad and can reach children as young as eight – therefore we included school programmes such as the United States 4-H clubs.² Many secondary and vocational schools also reach young people below 18 with agricultural education and training.

¹ Dimitra Clubs: <http://www.fao.org/dimitra/dimitra-clubs/en/>

² 4-H clubs: <https://4-h.org/>

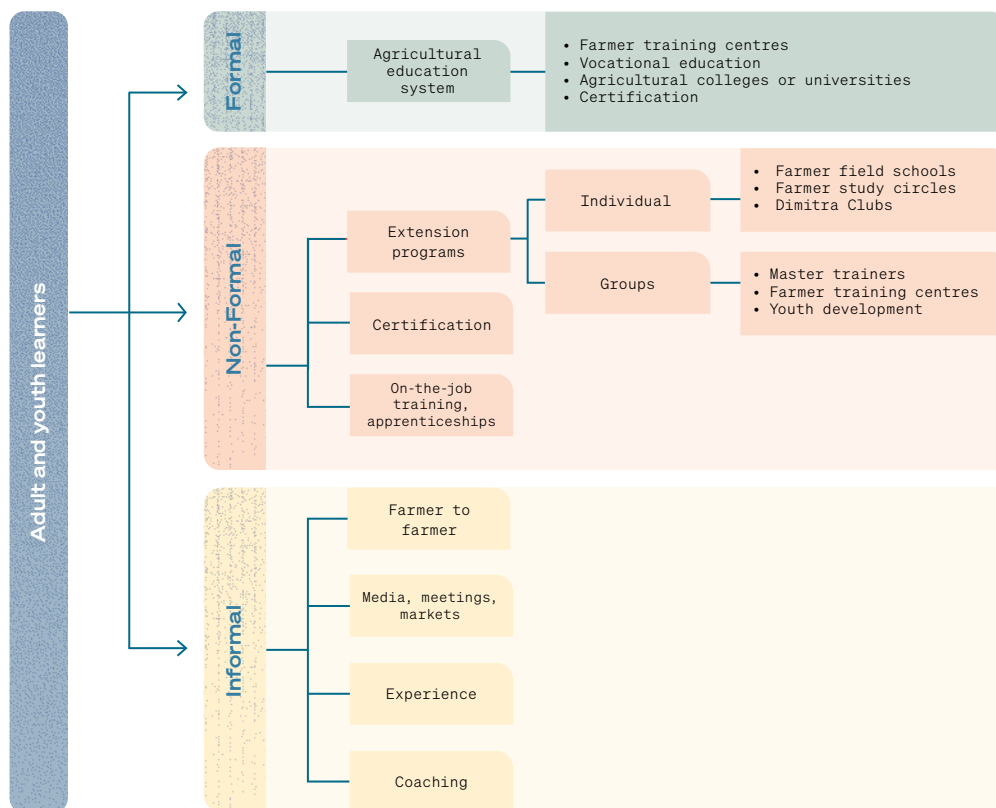


Figure 6

Typology of agriculture human capital investment delivery methods

SOURCE: Authors based in part on Kirui and Kozicka (2018).

As seen in Figure 6, we first consider whether a human capital delivery method is **formal**, **non-formal** or **informal**. Education and learning occur throughout a person's life, but not always in a classroom or a structured environment. The **formal** agricultural education system can include farmer training centres offering certificates to learners, agricultural colleges and technical and vocational education and training centres (which often offer diplomas), and agricultural universities which offer degrees. Learning through the formal system often results in a profession or a trade.

In the **non-formal** learning section of the typology, we find the classic extension programmes and training for specific purposes or skills. There are extension programmes that target individuals or groups to increase their human capital through (for example) training master trainers, 4-H or farmer training centres. Extension programmes also use group approaches such as FFSs, farmer study circles or Dimitra Clubs. While individuals improve their human capital, the focus of the approach is on the group. Other non-formal initiatives include certification (this may be offered by companies), on-the-job training or apprenticeships. Learning on the non-formal side can result in a new skill or certification.

With **informal** learning, learning is more organic and ad hoc, for example, gatherings at a church or input dealer shop, farmer-to-farmer sharing of information or information from the radio or social media.

While it is beneficial to focus on intentional and systematic (“guided”) human capital development initiatives – those with a purpose of increasing human capital – we do not ignore the ad hoc or casual initiatives. Thus, we include farmer-to-farmer learning, WhatsApp groups (Box 7), the media and personal experiences. While these activities may not aim to provide skills and knowledge to producers, they can still build human capital and therefore are included in the typology under the informal category. The largest category of agriculture human capital development delivery methods that reaches smallholder producers is extension education programmes and much of the focus will be there.

It is important to note that there is often an overlap between the different categories (formal/non-formal/informal).

BOX 3

SKILLS, TRAINING AND EDUCATION: WHAT’S THE DIFFERENCE?

What is the difference between skills, training and education?

Skills are often occupation-based and focused on competencies for economic value.

Training imparts a special skill, often at the occupational level.

Education is a more systematic type of learning that is often for everyone.

Human capital, as defined here, is broader still in that it can include personal health or migration.



PASTORALIST TRAINING CENTRES (PTCS) IN ETHIOPIA

Pastoralism is an important livelihood in Ethiopia, covering 60 percent of the total land mass. The Ethiopian agricultural extension system in pastoral/agro-pastoral areas is based on pastoralist training centres (PTCs) supported by trained development agents (DAs). PTCs are knowledge institutions for the delivery of information, training about modern production methods and providing advisory services for pastoralists. PTCs also serve as an entry point to bring about behavioural change through knowledge, skills and attitudes on improved technologies and modern and commercial agriculture. Currently, about 1519 PTCs have been established.

Four agricultural technical vocational education and training colleges have been established in pastoral and agro-pastoral areas. From these colleges, DAs have graduated with diplomas in livestock husbandry and animal health. These graduates serve as frontline extension workers at PTCs to give extension services. Currently, most DAs are not capable of providing the expected services to pastoralists due to limited knowledge and skills of DAs, inadequate incentives to motivate and retain DAs and poor working environment (e.g. inadequate housing and office facilities, limited transportation facilities).

PTCs are funded through seed money from the regional government and community contributions. DAs are paid by the regional government. While the model is an important mechanism to reach the pastoralists in the country, key bottlenecks reduce performance of PTCs. These include (1) limited basic infrastructure and facilities such as housing, transport, implements and office materials; (2) shortage of demonstration sites; (3) lack of operational budget; (4) lack of mobile PTCs that move from one area to another with pastoralists; (5) limited involvement of pastoralists in PTC management; and (6) lack of appropriate technologies for pastoralist areas. For PTCs to be hubs for knowledge and information for pastoralist areas, it is important to furnish and equip PTCs with basic infrastructure and facilities, strengthen capacities of DAs, design mobile PTCs and create self-sustaining and community-owned PTCs.

Further reading: Ministry of Agriculture and Natural Resources (2007); Ministry of Agriculture (2013); Ministry of Agriculture (2019)



Chapter 5










Case studies of agriculture human capital investment

We will now present a synthesis of the main empirical findings from this study on AHCI, drawing mainly from the nine published country case studies but also including information from the boxes, literature review and exchanges with experts. While all nine cases are components of larger programmes, these case studies focus specifically on the model of farmer learning and individual human capital development.

We first present an overview of the nine published cases (see section 5.1). Table 3 presents basic case information. We use the country names throughout the report rather than the official title to avoid confusion and keep the focus on the **model** of agriculture human capital investment rather than the overall initiative (see Figure 2).

Table 3

Overview of nine case studies and their agriculture human capital investment models

	Official name of project/ programme/initiative	Investment area and agriculture human capital investment model	Short name	Reference
	Professional Training Programme in the Agropastoral and Fisheries Sectors in Cameroon	Investing in youth vocational training	Cameroon	Lhoste and Takamgang, 2021
	Productive Alliance Programme in Chile	Strengthening smallholder producers' skills and market access	Chile	Castillo <i>et al.</i> , 2021
	Jharkhand Opportunities for Harnessing Rural Growth Programme in India	Investing in women livestock advisers and farmers	India	Kumar <i>et al.</i> , 2021
	Rural Empowerment and Agricultural Development Scaling-up Initiative in Indonesia	Investing in farmers through public-private-producer partnerships	Indonesia	Amanah <i>et al.</i> , 2021
	Smallholder Horticulture Empowerment and Promotion Approach in Kenya	Motivating farmers' market-oriented production	Kenya	Mwangi <i>et al.</i> , 2021
	The Haku Wiñay/Noa Jayatai Programme in Peru	Investing in rural households through community promoters	Peru	Salcedo and Arca, 2021
	Twigire Muhinzi National Extension System in Rwanda	Institutionalizing farmer field schools	Rwanda	Neza <i>et al.</i> , 2021
	Capacity-building agencies in the United States of America	Collaborating to develop agricultural skills	USA	Peterson <i>et al.</i> , 2021
	Capacity development initiatives in Cameroon and Côte d'Ivoire	Professionalizing farmer organizations through private sector-led models	West & Central Africa	Gordon, 2021

SOURCE: Authors' own elaboration.

5.1. MODEL PROFILES OF NINE CASE STUDIES

Professional Training Programme in the Agropastoral and Fisheries Sectors in Cameroon

HUMAN CAPITAL INVESTMENT MODEL

Vocational training through centres and schools towards a profession and a diploma; alternating classroom training with on-the job (work-study training) and apprenticeships or internships, mentoring, and coaching.

TARGET

Young people (18-35 years old) in rural areas; post-primary graduates (target 40 percent women) and secondary school graduates.

HUMAN CAPITAL TYPE

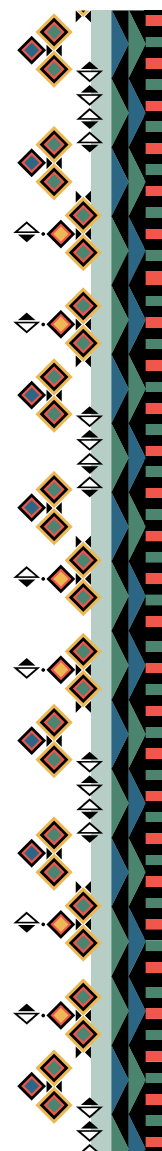
Skills for ten different professions plus marketing, entrepreneurial and social skills, leadership and training skills; self-esteem.

RESULTS

10 509 young people trained in entrepreneurship professions and developed entrepreneurial and social skills, especially technical and professional capacities for strategic decisions in production system management. Processing and marketing skills were poorly mastered.

TAKEAWAY

The success of the model is based on integrating a young person both professionally and socially within local communities, equipped through theoretical and practical training with some financial and logistical support for their agricultural business, coupled with local demand and political buy-in.



Case Study 2 Chile



Productive Alliance Programme in Chile

HUMAN CAPITAL INVESTMENT MODEL

Creation of stable commercialisation channels and specialised advice provided by buyers, typically larger, export-oriented specialty crop companies (e.g., berries, dairy, meat). Commercial partnerships between small farmers and larger companies with 40-70 percent government funding facilitate the acquisition of skills.

TARGET

Small-scale producers (up to 12 hectares, with basic irrigation infrastructure and a total value of assets below USD 150 000), whose main income source is agriculture and are directly engaged in agricultural production, regardless of their land tenure.

HUMAN CAPITAL TYPE

Specialised training by buyers in production methods, farm management, and technical and quality requirements for new markets (e.g., fair-trade, agroecological agriculture).

RESULTS

Producers established stable commercialisation alliance with buyers. Participants improved production practices and managerial skills, leading to improvements in product quality, more stable profits, and personal skills development. However, small producers remain vulnerable to climatic and other risks.

TAKEAWAY

Success of the programme heavily depended upon support from government, both monetary and technical assistance, posing questions of whether buyers and small farmers can autonomously maintain alliances over time without governmental intervention.



Jharkhand Opportunities for Harnessing Rural Growth Programme in India

HUMAN CAPITAL INVESTMENT MODEL

Advising and training female livestock farmers through certified female master trainers and female community service providers; experiential learning methodology covered technical, social, spiritual, and personal skills and mindsets.

TARGET

Women livestock owners, community livestock service providers and master trainers in Jharkhand State.

HUMAN CAPITAL TYPE

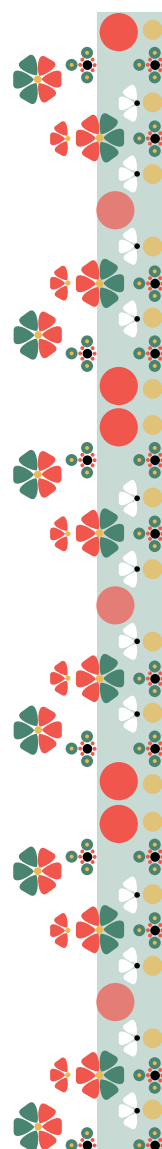
Strategically identify, train, and coach community service providers to provide doorstep technical, marketing, and risk reduction support to female livestock farmers. Service providers are supported by certified master trainers. Training is in human skills and capacities, confidence building, technical abilities, and financial competencies.

RESULTS

Capacity enhancement evidence was observed in terms of changed practices by livestock farmers: timely vaccination, deworming, castration, animal cleanliness, feed supplements and clean drinking water for the livestock. These practice changes led to income enhancement. Empowerment and social and functional skills were also evident.

TAKEAWAY

The model provided empowered marginalised female livestock farmers and community service providers through a holistic training and coaching programme, leading to increased incomes and positive social outcomes.



Case Study 4 Indonesia



Rural Empowerment and Agricultural Development Scaling-up Initiative in Indonesia

HUMAN CAPITAL INVESTMENT MODEL

A public-private-producer partnership provided training for extension workers and village facilitators on upgrading cocoa extension skills, training on new practices and post-harvest practices. FFSs provided technical training through trial plots and “cocoa doctors” (lead farmers), master trainers, and village facilitators who supported good agricultural practices and motivated farmers and groups.

TARGET

Cocoa-producing smallholders, either poor or near-poor farmers, who can generate economic returns from agriculture with programme support to smallholder or landless farmers, female heads of household and lead farmers who have potential to be a change agent.

HUMAN CAPITAL TYPE

Technical skills, good agricultural practices, marketing, group development.

RESULTS

Increased knowledge of and practical skills in cocoa farming, including technical skills, soft skills, and empowerment. Productive skills increased the quality and productivity of cocoa. The programme increased farmers’ confidence to sell a quality product.

TAKEAWAY

The public-private-producer partnership resulted in a dynamic relationship among stakeholders that encompassed different interests and resources; intensive dialogue, maintaining mutual trusts, respect and accountability among stakeholders affect partnership effectiveness.



Smallholder Horticulture Empowerment and Promotion Approach in Kenya

HUMAN CAPITAL INVESTMENT MODEL

Training groups with theory and practice while promoting “farming as a business” and “empowering and motivating farmers” using systematic and motivational trainings (market visits, stakeholder forums, group planning, classroom sessions, in-field demonstrations).

TARGET

Male and female smallholder farmers producing and marketing horticultural crops in 33 Kenyan counties.

HUMAN CAPITAL TYPE

Technical and soft skills based on the theory of self-determination and designed to create an optimal environment for farmer motivation for market-oriented farming; trainings emphasised supporting learners’ psychological needs for autonomy, competence, and relatedness; farmers conducted market surveys and interacted with market actors.

RESULTS

New diverse skills and knowledge and training influenced farmers to change their mindset and behaviour towards market-oriented horticulture production; this appeared to lead to an increased quantity and quality of yields, improved market access and in overall contributed to increased incomes of the farmers.

TAKEAWAY

Flexibility, complementarity, and adaptability presented opportunities for scaling out geographically and adoption by agricultural extension delivery organizations. The self-determination theory allowed farmers to understand market opportunities and then independently choose actions to maximise market opportunities.



Case Study 6 Peru



©FAO/Jordi Vaqué Rabal

The Haku Wiñay/Noa Jayatai Programme in Peru

HUMAN CAPITAL INVESTMENT MODEL

Training and technical assistance to low-income rural households to develop productive and entrepreneurial skills through community promoters selected by local communities and linking producers to markets.

TARGET

Subsistence and small agricultural households in rural Peru.

HUMAN CAPITAL TYPE

Training on basic business finances, commercial services and market integration; community promoters receive training on irrigation techniques, vegetable gardening, pasture production, organic fertilizers, Andean crops and commercial agriculture planning which they impart to communities where they are contracted to provide services.

RESULTS

Income increases included higher yields and lower costs of production. Participants highly valued healthy practices such as hand washing and water boiling, and safe cookstoves.

TAKEAWAY

While community promoters are known and selected by the community, it takes significant effort, time, and resources from promoters to be considered trustworthy by the community. Key features for success were active participation of the community in the design and implementation of the community projects and the simplicity and low cost of implementation of the techniques.



Twigire Muhinzi National Extension System in Rwanda

HUMAN CAPITAL INVESTMENT MODEL

Farmers groups supervised by farmer promoters with access to basic extension messages through village demonstration plots. Facilitators scale up and out acquired skills by training local farmers' groups and providing technical backstopping to farmer promoters.

TARGET

All smallholder farmers in Rwanda.

HUMAN CAPITAL TYPE

The holistic curriculum includes decision making, general agronomic skills, harvesting and postharvest practices, conflict resolution, management of group resources, collective marketing, managing and maintaining groups and mechanisms for group self-regulation.

RESULTS

Technical skills (livestock nutrition and management and cropping systems); social skills (gender, women empowerment, market and value chains, collective action); functional skills (savings and credit and market analysis); and empowerment (critical thinking, experimentation, innovation, group/community empowerment, and mindset change). The skills include improved production and productivity and livelihoods and wellbeing.

TAKEAWAY

Mainstreaming the approach into the national extension system and financial support through public-private partnerships contributed to scaling up. Key enabling factors included coordinated support and planning at central and decentralised levels and support from development partners, nongovernmental organizations, and civil society.



Capacity-building agencies in the United States of America

HUMAN CAPITAL INVESTMENT MODEL

Formal and non-formal education, state government agencies, and advocacy groups contribute to agriculture human capital development. By working individually and together, the system educates youth and adults using formal classes, non-formal educational workshops, educational curriculum and certification programmes, and one-on-one technical assistance.

TARGET

All residents of the State of Mississippi.

HUMAN CAPITAL TYPE

Technical, functional, 21st Century skills, empowerment.

RESULTS

The combination of coordinated multiple delivery methods and state-wide reach resulted in positive outcomes related to hard or technical skills, soft or functional skills, and empowerment.

TAKEAWAY

System collaboration was beneficial and contributed to the development of agriculture through (1) broadening the base of expertise available to clients; (2) leveraging complementary resources to serve diverse audiences; and (3) creating new initiatives.

Case Study 9 West and Central Africa



Capacity-development initiatives in Cameroon and Côte d'Ivoire

HUMAN CAPITAL INVESTMENT MODEL

Strengthening organisational capital of farmer organizations by an organisational skills assessment with tailored training and coaching of leaders. Involvement of the private sector (Olam, Telcar and Cargill) ensures market channel access for participating farmer organizations.

TARGET

Leaders of cotton and cocoa farmer organizations in Côte d'Ivoire and Cameroon (most of whom are farmers).

HUMAN CAPITAL TYPE

Foundational agribusiness and managerial skills; integrated hard and soft skills, such as combining an emphasis on monitoring harvests and crop purchases and record-keeping with content on how to engage and encourage farmer members.

RESULTS

Development of financial and internal management skills and improved production base in farmer organizations, which facilitated transparency and stronger engagement with farmer members. Improved participation, meeting certification production standards, and increased sales by the farmer organizations suggest that an increase in farmer organisational capital has facilitated human capital among individual farmer members as well.

TAKEAWAY

Working with farmer organizations facilitates a wider reach to small-scale farmers. Assessments as an integrated part of the training and coaching ensure a good fit for different needs, while core standardised content keeps the model cost effective. Involvement of buyers ensures market access learning incentive for farmer organizations and individual farmers.

5.2. DELIVERY METHODS OF AGRICULTURE HUMAN CAPITAL INVESTMENT CASES

Using the typology in Figure 6, we see that the models of AHCI in the nine case studies included formal, non-formal and informal delivery methods. The Cameroon vocational training delivery method was formal. Informal methods included the female community livestock service providers in India and the lead farmers in Indonesia. Box 7 shows how WhatsApp is used to informally build human capital. Farmer coaching used by Mondelez with cocoa producers in West Africa and Indonesia (Box 6) and by companies in West and Central Africa is also informal. However, many models had more than one type of delivery method; for instance, interagency collaboration in Mississippi included formal and non-formal education.

The India case was an example of a model starting with informal delivery methods that became formalised so that the community service providers and master trainers could get formal certification. Apprenticeships can fall into any of the three categories. They were formal in the Cameroon case, but informal in Trinidad and Tobago (Box 5).

As noted in Chapter 4, non-formal delivery methods include classic extension programmes and training for specific purposes or skills, and many of our cases fit here. The public-private-producer partnership extension in Indonesia, Rwanda's extension system, and the Kenya case were all non-formal extension programmes. Delivery of extension services was not only the non-formal type, however. Several other cases also used lead farmers or community promoters to help amplify their extension efforts. This included the livestock community service providers in India, lead farmers and cocoa doctors in Indonesia, community promoters in Peru, and farmer promoters in Rwanda.

APPRENTICESHIPS AND ON-THE-JOB TRAINING FOR RURAL YOUTH AND WOMEN EMPOWERMENT IN TRINIDAD AND TOBAGO

In Trinidad and Tobago, crime is an issue and the number of youth at-risk admitted to correctional and rehabilitative institutions is rising. Many argue that the lack of educational and employment opportunities creates frustration caused by a system perceived as oppressive. Moreover, many employed young women and single mothers are frustrated by the low autonomy with working hours as well as discrimination, as they have to balance their jobs with family responsibilities. Tackling these two key issues, the One Seed For Change Initiative embarked upon an apprenticeship and on-the-job training programme named “Rural Youth and Women Empowerment through Agricultural Entrepreneurship” (RYWEA) in 2017. Involving agricultural environment stakeholders, the programme is targeted at youth and women from rural communities at risk. It takes a holistic approach to human capital development through improving employable agricultural skills and providing opportunities for sustainable livelihoods through agricultural entrepreneurship skills, life skills, mentorship, and on-the-job training. Participants learn how to start businesses and add value to agricultural products.

The apprenticeships of eight months, with 20 apprentices per cycle, are coordinated through strategic partnerships with local companies that produce and process raw materials. These companies accommodate on-the-job training of apprentices and in return, receive staff assistance, joint branding and promotion of corporate social responsibility.

One apprenticeship cycle proved very successful and resulted in a cohort of highly-trained and motivated female entrepreneurs. One apprentice launched a product, “Cocoa Nuts” – peanuts roasted and coated in local cocoa – which is now marketed via a retail partner. Another started a cocoa butter cosmetics business.

The strength of the programme is that beyond developing a trained pool of individuals, it promotes agriculture as a modern attractive business for youth while promoting female role models in entrepreneurship. It creates an active community of mentors, motivators, corporate partners, and apprentices turned entrepreneurs in a hub for further development of all community members. New entrepreneurs thereby receive support also after the programme has ended.

Because the current funding model comprises small corporate sponsorships, a new funding arrangement would be necessary to scale up the programme as the next step towards a self-sustaining initiative.

5.3. OUTPUTS AND OUTCOMES: HUMAN CAPITAL GENERATED AND USED IN THE CASE STUDIES

This section presents evidence of the human capital (skills, capabilities, awareness etc.) generated or developed among agricultural producers in each of the models and relates those results with the types of delivery methods. We examine the link between **inputs** (the AHCI model and its delivery method) and **outputs** (the changes in human capital) as stipulated by the theory of change (see Chapter 3). We also examine the changes in human capital thematically, looking at a) technical agricultural skills; b) social skills and mindsets; and c) business and market skills and attitudes. The changes in human capital (outputs) can lead to **outcomes**, changes in behaviour that result from farmers gaining human capital. We group outputs and outcomes because in collecting data, farmers often expressed and exemplified the skills they gained by referring to the new or improved activities they are now able to undertake. In these instances, changes in behaviour are a result of changes in human capital, thus documenting the former helps testify to the occurrence of the latter.

5.3.1 Technical agricultural skills

Many of the technical skills that were taught to farmers in the case studies focused on good agricultural practices, that is, the use of good management principles for agricultural production for human consumption that do not harm the environment or human health. Results from Indonesia showed improvement in farmer knowledge, skills, and perceptions on producing cacao following good agricultural practice requirements. All interviewed farmers reported that their knowledge and practical skills on cocoa farming were increased regardless of the size of land managed for cocoa plantation. The training produced knowledge in agronomy, phytosanitary control, harvest and post-harvest as well as skills in the fields of seeding, grafting, pruning, composting and harvesting. Farmer key informants stated that FFSs enriched cocoa production practices.

COACHING SMALLHOLDER COCOA FARMERS IN CÔTE D'IVOIRE, GHANA AND INDONESIA

Cocoa Life, Mondelez International's cocoa sustainability programme, helps to ensure cocoa is made right: by protecting the planet and respecting the human rights of people in its value chain. Cocoa Life works hand-in-hand with the men and women who make their living from cocoa, focusing on making cocoa farming a sustainable business, creating empowered communities, and conserving and restoring forests.

Ensuring sustainable livelihoods for farmers is central to sustainable cocoa production. Cocoa Life provides farmers with individual coaching sessions, alongside group trainings on good agricultural and environmental practices, financial literacy and entrepreneurship. These interventions lead to more efficient farming, improve farmer income and livelihoods, and contribute to creating a sustainable cocoa supply.

The individualised coaching helps smallholder farmers and their families find solutions that work best for them. To do that, coaches and farmers analyse options for improving farm productivity, and together design a farm development plan (FDP). The coach then carries out regular follow-up visits – up to four per year – to encourage adoption of best practices and support with any challenges, while the farmer implements the management changes agreed in the FDP. The coaching process can continue over several years. Coaches are either private or public agents who have been trained and equipped for coaching, as well as to support in applying for micro-credits to finance farm inputs.

By 2019, over 55 000 Cocoa Life registered farmers in Côte d'Ivoire, Ghana and Indonesia had benefited from this coaching service. While a full evaluation of the impact of individual coaching is not yet available, Cocoa Life's overall impact data shows positive trends in both income and production. Although individualised coaching requires more investment than group training alone, the data shows that the benefits more than justify this approach.

Cocoa Life-registered farmers in Grabo, Côte d'Ivoire, agree that individual coaching is particularly effective, with comments such as “I find it motivating when the coach comes to my own farm” and “I understand it better when the coach explains it to me.” To continue making cocoa farming a sustainable business of choice, the Cocoa Life program is further strengthening and scaling its farmer coaching initiatives.

INFORMAL HUMAN CAPITAL INVESTMENT VIA WHATSAPP IN COLOMBIA

WhatsApp Ganadero is a virtual community of the Colombian Cattle Growers Federation (FEDEGAN) that connects more than 19 000 livestock producers organised into regional groups. Created in April 2016, this social network is an effective and direct communication channel between beef and dairy cattle producers in 31 regions of the country using smart mobile phone technology.

WhatsApp Ganadero guarantees timely sharing of sectoral news and provides livestock fair dates, regional climate forecasts and other important data such as weekly livestock prices in the main markets and vaccination cycles. It also sends newsletters and the weekly opinion column of the FEDEGAN President. Livestock farmers' groups share productive and commercial experiences, success stories in sustainable production, promote their products and identify new business opportunities.

The instant messaging system has helped the producers reduce transaction costs for selling or buying cattle. The farmer can now send photos or videos and agree on the price directly with the buyer without intermediaries, and avoid risks associated with moving animals to cattle markets. This digital tool has also facilitated farmer-to-farmer technology transfer processes on new practices or equipment.

All members of local cattle organizations belonging to FEDEGAN may request access to the virtual community at no cost by sending a message to the communication department administering the network. The community manager of FEDEGAN coordinates the network and is responsible for sending weekly reports to all regional members.

The main impact of the virtual community is perceived as the cohesion of the members around FEDEGAN and the rapid access to information by all associates around the country. Testimonials from several network members published by FEDEGAN's magazine indicate the high level of acceptance and adoption of the platform by farmers and organisational leaders. These testimonials highlight that in addition to receiving up-to-date information the network has enabled them to do business more efficiently by saving time and reducing transaction costs. Given the success of WhatsApp Ganadero, FEDEGAN planned a launch of its e-commerce platform at the national livestock congress in November 2020.

More information: www.fedegan.org.co/servicios



[The programme] was very useful. I knew that there is specific treatment to increase the yield of cocoa bean. Through the... training and coaching, I got new knowledge on how to produce and to protect cocoa plant from pests and diseases. [male farmer, Indonesia]

Development of similar types of skillsets in agricultural practices (preparation of compost manure, land preparation, soil testing, raising seedlings, application of pesticides and fertilizer) was found in Kenya, as shown by this example:



We would not have known how to use manure – to dig a hole and to keep the manure without having to go to the shop to buy. So, if you do not have money to buy fertilizer, you can use the manure. We are taught how to prepare it. They have taught us a lot of things. [male farmer, Kenya]

The FFS approach in Rwanda likewise empowered farmers to make smart decisions based on observation and analysis, thereby applying improved, appropriate and sustainable agricultural technologies and practices, such as proper plant spacing; soil fertility management using correct amounts of fertilizer and other soil amendments; integrated crop pest and disease management; respecting the seasonal farming calendar; and constant farm observations and visits (agroecosystem analysis).

Good agricultural practices were also a focus in West and Central Africa, where an evaluation found that although the use of pesticides had only slightly dropped, farmers were switching from basic sprayers to more sophisticated atomisers (88 percent compared with 59 percent at the start).

The Chile model taught skills for specific methods of production such as fair trade and agroecological farming, which are required for certification by purchasing companies. In Chile, producers who developed specific productive skills evaluated their participation positively, because they received higher prices and saw opportunities for future growth, since “food supply for the future is oriented towards this way” according to one berry farmer. The skills training changed both practices and perceptions. A berry farmer explains:



For pruning in the past, we used to burn down everything, now we do not do it at all, we incorporate pruning. We learned how to take care of wildlife. Before we used to hunt down birds when we realized that it is right the opposite, they actually provide us with a service.

[female berry farmer, Chile]

The female livestock service providers in India reported improved technical abilities to handle primary animal healthcare. This includes a detailed knowledge of animal anatomy, diseases, preventive and curative measures such as timeliness of vaccination, deworming, castration procedures, teeth clipping and feed supplements and mineral mixtures. After attending trainings on goat, pig and poultry care, a female master trainer proudly announced:



Earlier I was afraid of animal death during castration but, now there is almost zero percent animal mortality during castration.

[female master trainer, India]

The community livestock service providers and the farmers themselves in India gained enhanced awareness of animal feed and hygiene. The farmers learned how to bathe pigs, provide clean drinking water, as well as diagnose diseases, and adopted timely vaccinations, deworming and other animal care activities. Community service providers could diagnose and suggest appropriate treatments for animals; if in doubt, they could consult with veterinarians. The services that these community livestock providers gave ensured enhanced awareness and appreciation of improved practices among other livestock farmers as well. The community service providers played a significant role in bringing about changes through trainings, regular follow-up, and doorstep delivery of inputs and services.

In Cameroon, learners gained mastery of animal and plant production techniques, farm management capacities, marketing techniques and sustainable management of soil fertility, as one learner stated:



The training has changed us, I respect the dimensions (sowing) and the yields are very, very different.

[young learner, Cameroon]

A parent of a young male respondent notes:



We do archaic catch-all agriculture, we plant our cassava at random. But our son lays out the crops, he plants in staggered rows, he ploughs in furrows, he makes ridges, he sows in line; it's beautiful to see.

[Ayite and Leppens, 2016. p.72]

5.3.2 Functional and social skills and empowered mindsets

In several cases, farmer participants testified that they learned skills or changed attitudes related to communication, leadership, public speaking, critical thinking and decision-making.

One example was from young farmers participating in the Mississippi case. Two leadership programmes were part of the model: the Young Farmers and Ranchers Program, whose purpose was to develop young people aged 18-35 into future leaders and advocates (Mississippi Farm Bureau Federation, 2018b); and the Women's Leadership Program, which involved females in various community and leadership development programmes. In addition, youth organizations such as Future Farmers of America (FFA) and 4-H also built leadership skills:



I think the majority of the leadership skills happened when I started to get older and I started to help out with the younger 4-H [members], with different programmes. I would help the kids who just started, showing goats and teaching them things.

[male, non-formal education former client, USA]



I definitely learned a lot of my soft skills... how to speak in front of people, professionalism, how to network, just all-around people skills... FFA helped me with... learning about different people and, especially now that I'm in the classroom, how to talk to different people with different backgrounds than me and try to relate to them and not leave anybody out.

[female, formal public education former client, USA]

A focus of many organizations in the Mississippi case was on developing functional skills and a sense of empowerment. A public education representative explained:



The skills, doesn't matter the content area, are transferrable... Those are skills you need as an adult, not necessarily in a specific field... you need those skills no matter where you go... you need to draw on research and communicate clearly, and ask questions.

[female, formal public education representative, USA]

The Rwanda model encouraged social skills as well. The focus of FFSs was on gender, women's empowerment, critical thinking, experimentation, innovation, community empowerment, mindset change and collective action. Interviewees reported increased confidence because of their participation, which was translated into an ability to make decisions that they said positively affected production and productivity. Farmers and facilitators (who were farmers) said the approach enabled them to innovate and solve their own problems.

The Rwanda model promoted critical thinking that farmers need to shift from subsistence to market-oriented farming. A female field school facilitator stated: *"When choosing my farm investment, I make projections and base my decision on the expected yield so that I am sure it's worth it."* With the acquired skills, positive mindset changes and improved production, farmers became opinion leaders in their communities, as a horticulture farmer reports: *"I am now a very influential farmer in the community who is even visited by neighbours and foreigners."*

The AHCI model in Chile also promoted development of personal skills, mainly among women. It did not have specific provisions to promote inclusion of marginalised groups, however, some participating women felt that they particularly benefited through developing soft skills such as communication and interpersonal skills. Programme participation allowed them to participate in additional programmes and to generate new or more stable sources of income. The programme *"has set women very high up"*, said a berry farmer (male). Another producer (female) said: *"I am one of the women who have dared to go out on field trips, have a voice to ask questions and sign up for projects"*, suggesting that the programme has promoted her empowerment.

Another category of social skills are facilitation and managerial skills. These skills were evident in the case of Indian master trainers, who learned responsibility, participation, teaching and communication. They learned to take full responsibility for training community service providers; preparing venues; planning training content and sub-group activities, tests, feedback forms, and field assignments; logistics, and handling urgent needs of participants.

Other findings from the Indian case show how self-esteem and confidence were developed among community service providers and master trainers. Having acquired technical expertise on livestock farming and more self-reliance, gender equity and family welfare, these women gained empowerment and recognition in their communities. Many reported increased abilities to speak publicly, as well as better listening skills and empathy. The master trainers became well known in their community and the local-level government officials, community livestock service providers, and livestock farmers reached out to them for advice. The women farmers gained respect as well, with other farmers visiting to learn, their children going to better schools and increased participation in the local village council.

The Kenyan case likewise provided evidence of women's empowerment, especially within household roles. Due to the training on family budgets and gender awareness, many women explained that awareness led to division of labour, lowering their heavy workload:



The issue of gender was new to me, my husband knew sweeping, fetching water was my responsibility, I went to the farm, washed clothes. When we got the training about gender, we realized we could help each other with these responsibilities. After training, he changed. When I am sweeping, he takes the bicycle and fetches water. I realized I had been suffering, working the whole day without resting. My life was changed. [The Kenya model] has changed people. He even put up a storage tank at home. Now having drinking water is not a problem. Even when you go somewhere and come late you just turn the tap and cook.

[female farmer, Kenya]

Findings also suggest that the Kenya model helped develop a sense of empowerment among farmers generally. Here, being informed and skilled led to the confidence needed to reach out to input suppliers and negotiate better deals:



I am now applying these skills with confidence. I now know about pests such as aphids and how to control them... I am able to contact people like Bayer chemicals. Whenever I have a problem, I am able to contact them. So, I do not experience any problems since we were linked to the seed and chemical companies. Also, we buy farm chemicals together and we get better price for bulk buying.

[male farmer, Kenya]



Now we know our rights as members of the cooperative. And we can see how we can support our families from our cocoa. Before we didn't pay much attention to the cocoa and didn't realise we could really make a living from this – and now we are selling certified cocoa!

[women's group member, Cameroon]

In Cameroon, a different group of producers experienced enhanced confidence: youth. The professional training enabled confidence building and motivated continued learning. One learner stated: *“The training made my head stand up. After two years, I have a different outlook on life. It opened up a whole new world for me.”* Young farmers also developed a sense of leadership. Because they could train other farmers in the area, they gained recognition and social status (including access to responsibilities) within the community. Trained and professionally integrated young people became resource persons in their areas of professional competence and on social issues. *“The neighbours are interested in my techniques and my field and when they see the crops, they adopt them, they are the good cheaters (they copy)”* stated one youth. Others also testified, *“I have become someone today and I can speak up in my family and even in the community.”*

Changes in attitudes and empowerment were also seen in Cameroon in the West and Central Africa case. The producer training targeting individual men and women farmers mirrored and reinforced aspects of the Agribusiness Leadership Programme by developing farmer capacities, business planning, and encouraging members by being more transparent and inclusive.

It appears that acquiring technical skills did not only give farmers the ability to innovate on their farms, but it also gave them confidence to take on new activities, which could change their means of livelihood entirely. As one farmer from the Indonesia case explained:



I can run and develop [a] cocoa nursery after... the training from Mars... Before joining the programme, I was a vegetable seller in the village. After the training, I tried the cocoa nursery and I started to sell the cocoa seed. I feel confident in running [the] cocoa nursery as [an] income generating activity.

[female farmer, Indonesia]

The model of human capital development in Indonesia helped strengthen farmer groups to learn and to work together to access market cocoa beans. Farmers developed group cooperation and decision-making skills, and group members learned communication, entrepreneurship and marketing skills.

A key set of empowering and functional skills is very basic: literacy and numeracy. During the final capstone event, participants discussed the fact that since many farmers do not have a basic education, we should consider literacy and numeracy training when examining human capital. Indeed, the early human capital researchers such as Schultz (1961) and Becker (1964), made the same point. For instance, the Agricultural Sector Training Authority in South Africa (Box 13) regards these as basic skills before progressing to formally recognised training.

5.3.3 Farming as a business – managerial, market, financial and record-keeping skills

A number of the cases also showed improvement in management, marketing and financial skills, and changed attitudes towards farming as a business.

Chile's model imparted management and planning skills, teaching producers to follow protocols for monitoring productive activity through registers. One male farmer stated, *"as farmers sometimes we are a bit reluctant to keep records but we have had to learn to register when, for example, a calf dies"*. The Chile case also developed management skills, which participants said translated into better yields and an increased ability to meet certification requirements, as a female apiculture farmer stated:



Now other things are demanded from us, for example: having our harvest rooms authorized by [the Agriculture and Livestock Service] or having certificate in food processing. There are many requirements for exporting.

[female apiculture farmer, Chile]

Indian female livestock producers gained skills on market and value chains, savings and credit, and market analysis. Financial awareness and awareness of the economic importance of livestock activities increased significantly among the community livestock services providers. Producers expressed their understanding that livestock rearing was economically rewarding and less labour intensive than other local opportunities available.

Farmers in Kenya acquired skills on conducting market surveys, keeping farm records and developing crop calendars. In addition, they acquired soft skills that included interpersonal and family relations, decision making, problem solving, negotiation, communication, group leadership and time management. They also saw improved access to markets and were able to manage their farming business better (leading to increased incomes):



I have learnt on how to make a budget; initially I used to plant without one. Now I use the budget to track how much fertilizer I have used and through the records I can see my profits or losses. Like planting calendar, I did not know about it at all. Problem map and about the problems you are likely to get when farming, on the roads and in the market and how to resolve them. So, I was able to learn that, when you have these problems, how do you solve them. For instance, we never used to do soil testing and we were trained on the importance of soil testing. Also, on labour saving, for instance how to work together by supporting each other to reduce labour through group rotational labour. So, you are taught how to identify and solve problems.

[male farmer, Kenya]

The Indonesia case contributed to a “new orientation” in cocoa farming. Before joining the project, farmers perceived agriculture—including cocoa farming—as “culture” or “heritage” rather than a “business.”

In West and Central Africa, both purchasing companies and cooperatives recognised the importance of the Agribusiness Leadership Programme in helping cooperatives reach a level of record-keeping where they are more likely to meet bank requirements.

Evidence from Cameroon also suggested that youth gained general skills and strategic decision-making skills in the context of running a professional operation. They moreover learned how to manage the production system in a sustainable way as well as how to market their agricultural products.

KNOWLEDGE AT THEIR FINGERTIPS: HOW A 'ONE-STOP' PORTAL CAN HELP TRANSFORM KAZAKHSTAN'S DAIRY INDUSTRY

Kazakhstan's 1.7 million small family farms produce the lion's share of raw milk in the country, at nearly 80 percent. But milk quality is often poor, availability is seasonal and distances to dairy plants can span hundreds of kilometres, risking spoilage and increasing costs. As a member of the Eurasian Economic Union, Kazakh producers must meet rigorous food safety standards, meaning smaller dairy farmers need knowledge and skills to upgrade their operations and improve production. This is where a dairy initiative supported by FAO and the European Bank for Reconstruction and Development comes in.

Through the initiative, Kazakhstan developed a national milk quality roadmap that translates the complex standards into practical recommendations – from improved hygiene practices to overall farm management. The success of the roadmap hinges on the widespread sharing of this information and knowledge, ultimately leading to stronger working relationships. To this end, the Dairy Union of Kazakhstan set up a Smart Milk portal – a 'one-stop shop' on good practices and food safety along the entire dairy supply chain, from farm to table.

With the portal, dairy farmers, milk collectors, milk processors and even consumers have relevant knowledge and guidance at their fingertips – from video tutorials and a farmer's resource book to a series of animations and posters with simple, straightforward messaging in Kazakh and Russian. That includes everything from keeping cows healthy and happy, to properly disinfecting work spaces and utensils, to understanding the importance of consuming milk that is safe and free from antibiotics. Furthermore, this knowledge can be accessed with a smartphone or a tablet anywhere and at any time.

Featured in the portal is Collect Mobile, an innovative app that allows Kazakh dairy companies to monitor the performance of their raw milk suppliers, gain insight into the suppliers' growth potential and optimise milk procurement routes. Field data from customised surveys shed light on the obstacles preventing farmers from producing more and higher quality milk and help the companies better target their support to small-scale farmers. They can advise farmers, for example, to use a disinfected steel milk churn instead of a plastic bucket to reduce the presence of harmful bacteria in the milk, preventing a potential loss of income.

The initiative has also supported trainings for 40 national advisory service providers across the country – consultants who can then share their knowledge on better farm management and milk quality with even more farmers.

Simple digital solutions, like Collect Mobile and the Smart Milk portal, alongside more typical training and policy work, are transforming the dairy industry, building bridges and trust between Kazakhstan's smaller farmers and dairy companies. Such solutions result in greater industry efficiency and resilience to shocks and faster growth.

More information: Phase I - <http://www.eastagri.org/meetings/index.php?id=123>
Phase II - <http://www.eastagri.org/meetings/index.php?id=146>; The Knowledge portal itself is at www.smartsut.com

5.4. IMPACTS FROM ACQUIRED HUMAN CAPITAL

As illustrated by the theory of change (Figure 4), the outputs of different types of human capital (skills, competencies, empowerment) generated from human capital investment contributed to changes in behaviour (outcomes) leading to wider impacts such as increased income, improved yields and social cohesion.

5.4.1 Impacts on incomes, yields, and livelihoods

In India, the impacts from providing animal care services and rearing animals contributed towards family income generation and their economic wellbeing (Table 4).

Table 4
Economic gains reported by livestock farmers

Indicator	Changes
Increase in herd size	2 goats to herd of 12-45 goats 2 pigs to herd of 21 pigs
Additional income from pig rearing	USD 600
Reduction in marketing time for goats and pigs	From 12 to 6 months
Weight gain of pigs	25 percent more in same time period
Income enhancement from goat rearing	USD 267 to USD 667
Rearing goats for investment in daughters' education	3 goats increased to 47 goats

SOURCE: Kumar et al., 2021

In the USA, technical (hard) skills and functional (soft) skills gained resulted in numerous benefits: increased agricultural productivity, reduced expenses, higher individual and farm incomes, networks that link farmers and other producers, a better prepared workforce, and a strong agriculture industry that has good economic returns. The combination of multiple delivery methods and state-wide reach resulted in positive outcomes related to these skills and empowerment:



I learned basic livestock background... stuff about cattle, about livestock in general, not just about cattle, but how the whole industry works. How it feeds and supplies our world... I was in this programme called, The Heifer Development Program, that 4-H and [Future Farmers of America]... I learned a lot about the value of money through that programme... how to work hard... leadership abilities and work ethic... It just builds you into a better contributing citizen.

[male non-formal education client, USA]

In Indonesia, there was an impact on cocoa productivity. In one district it increased 100 percent from 600 kg per hectare in 2016 before the project to 1200 kg per hectare in 2019. One lead farmer who learned pruning, fertilising and controlling pests and disease from the trainings succeeded in improving cocoa production by around 30 percent, from 700 kg per hectare to 1000 kg per hectare annually.

As a result of participating in training via the smallholder horticulture empowerment in Kenya, farmers' income from horticulture increased substantially. During the first phase of the project, average horticultural net income per farmer per cropping season increased from USD 228 at baseline to USD 471 at project end (JICA and MOALF, 2009). In the second phase, average horticultural net income per farmer increased by 80 percent per cropping season from USD 342 at baseline to USD 613 at project end (JICA and MOALF, 2015). A terminal evaluation of Phase 3 showed average net income increase of 133 percent (nominal basis) and 104 percent (real basis) (JICA and MOALF, 2019).

Some Kenyan horticultural farmers were also able to send their children to better schools and improve their housing. Through investing profits from horticulture in water harvesting and storage tanks farmers were able to produce even when weather conditions were not good:



The change I noticed is that now I have more cash compared to the past. Then my child would be chased from school due to lack of fees. Now I am living, I now earn a better living from the training.

[female farmer, Kenya]



You know we do not have piped water currently and so even if your timing for the peak is right, it is difficult to produce for that peak. Since we are currently practicing farming as a business, we have been able to buy tanks which help us to collect water for farming.

[male farmer, Kenya]

Another Kenyan farmer stated:



My income has improved. Before the training I did not make any profits but rather losses because of bad marketing. In fact, I suffered losses for lack of good marketing. But now I have income that is catering for various issues at home like school fees. And the third thing is that the expense of hawking my produce has been eliminated; all I need is to make a phone call. My other produce is moving, like the French beans, which has a ready market. When my produce is ready, they call, and we agree on a date when they can come, and we harvest for them. So, this has been of great value to us. [male farmer, Kenya]

In Chile, there was an improvement in volume and yield across all segments analysed. However, a significant increase in production volume was achieved mainly by larger producers in the cereal and vineyards sectors, since they had greater capacity for land use and investment. Meanwhile, honey and crafts producers managed to convert small-scale agricultural activities into their main income source. Producers successfully specialised in specific production requirements to engage in alternative commercialisation models like fair trade and agroecological farming. A sampling of small-scale producers commented:



We are motivated because besides learning how to develop a better work, production has increased.

[male vineyard farmer, Chile]

We can always work better if we have more knowledge.

[male berry farmer, Chile]

I have felt remarkable support and I have improved my performance with the help of current projects.

[male cereal farmer, Chile]

Development of skills together with established commercial relations allowed all producers studied in Chile to improve their profits, not only by increasing production (many cereal, wine and crafts producers confirmed this increase), but also in terms of providing stability and more formal arrangements. In the case of handicrafts, profits increased due to the programme opening a previous non-existent commercialisation channel.

In Cameroon, due to income generated from their activities there was a perceptible improvement in learners' living conditions (improvement of housing, acquisition of means of transport, improvement of the quality of food etc.).

5.4.2 Impacts on inclusion

Inclusion means that the approach works for different groups, particularly the marginalised such as women, indigenous groups (Box 9) and youth (Box 10). However, at an impact level, it also means human capital gains, such as empowered and skilled individuals, have led to inclusion of such groups into communities, groups or society more generally.

BOX 9

BACKYARD GARDENS AND INCLUSION IN CEARÁ, BRAZIL

To promote nutrition and food security in the semiarid region of Ceará, Brazil, 4289 backyard gardens were established through the Paulo Freire Project (PPF), co-financed by IFAD and the State of Ceará. A total of 17 700 families benefitted, including 11 186 rural women and 3743 young people. The skills and capabilities of these families were strengthened through a series of field trainings, exchanges and workshops.

The backyard gardens proved to be important for income generation, food and nutrition security and agrobiodiversity and were implemented through productive investment plans. These plans served to introduce sustainable productive practices at the community level and included an array of technological innovations. They were central in revealing the value of the knowledge and practices of rural women within sustainable agriculture production, especially when it comes to the preservation of biodiversity, given that they are responsible for preserving creole seeds and exchanging plants at the local level.

Through the PPF, 84 women's groups were created, 85 percent of which focus on productive income-generating activities (agricultural and non-agricultural). An agroecological market network was created, allowing farmers to market their products directly. About 600 women and 500 Quilombolas (afro-descendants) have participated in a total of 205 markets since the project began. Rural women play a key role in these markets and use agroecological logbooks, a methodological tool for women, to prove the value of their contribution to the household budget. This removes the invisibility from a job previously labelled 'help' or 'housework' and shows the monetary and non-monetary contribution to their families' economies. The use of the logbooks strengthens bonds, creating a group identity as they hold regular meetings where they share experiences.

The project targets marginalised groups such as quilombola, indigenous families such as the Tabajara and artisanal fishing families. The project supported the use of grey water for irrigating vegetables, rainwater cisterns, eco-stoves and biodigesters for cooking and organic fertilizers. These are win-win solutions that improve the livelihoods and resilience of local families while respecting local and indigenous values and including women.

Thanks to participation in the Chile programme, many producers reduced vulnerability “to make a living” in the countryside. A young male berry farmer stated: *“I did not know anything. I have learnt everything with the Alliances Programme. I left to the big city but then returned to the countryside”*. Similarly, the smallholder horticulture empowerment case in Kenya attracted young people to venture into agribusiness and facilitated mindset change regarding agriculture, which were important in rejuvenating the sector.

BOX 10

EMPOWERING INDIGENOUS YOUTH AND THEIR COMMUNITIES’ FOOD HERITAGE: LESSONS LEARNED FROM THE OGIEK SLOW FOOD HONEY PRESIDIUM IN KENYA

Given its long storage life, honey has always been a staple, especially during droughts, for the Ogiek people in Kenya. The Ogiek Slow Food Honey Presidium was created in 2015 to promote beekeeping as a traditional practice and make it an economic option for the Ogiek community, building also on the entrepreneurial capacities of youth and women.

Slow Food is a global network of local communities defending biodiversity since 1989. It has developed over 10 000 projects in 160 countries, with one million activists guaranteeing the right to access good, clean, and fair food for all. Through the Presidium programme, Slow Food supports small traditional production at risk of disappearing, revives ancient processing techniques, and saves native breeds and local plant varieties from extinction. The Ogiek Presidium is one of over 500 Slow Food Presidia worldwide.

Despite the strong gender-based division of labour in the Ogiek beekeeping and honey production process, the role of women and youth has been enhanced. Conscious efforts were put in place to ensure that youth and women participate in training, knowledge exchanges with educational establishments and other producers comparing modern and traditional beekeeping, and promotional events and exhibitions. As a result, women play an active role in leadership and beekeeping activities and have access to modern beehives, which are placed on farms where control and management are easier. The women’s share of membership increased from 40 to 44 percent over time; the share of young women almost doubled, from 7 to 13 percent, leading to growth of youth membership from 19 to 23 percent. Additionally, through the trainings, young Ogiek beekeepers started classifying honey differently depending on the altitude of the beehive location and the flower species bees have foraged, and employing different marketing strategies according to the various types of honey produced.

More information: <https://www.slowfood.com/ogiek-honey-the-precious-nectar-linking-tradition-with-the-future/>

The India case targeted women master trainers, community service providers and producers. All the community livestock service providers reported increased abilities for engagement and public speaking and skills to listen to others and to empathise. Women experienced increased recognition, which led to improved inclusion in their communities in some cases. Significant improvements were made in the context of rural India where gender-based discrimination is widespread and women are seldom allowed to go out freely and interact with strangers.

One farmer in Indonesia acquired knowledge on cocoa management that gave her better prices (under USD 2 per kg to USD 2.1 kg per kg). She stated:



The... programme provides hope for farmers to restore the glory of cocoa in the past. This programme recognized equal opportunities for women to become successful farmers. I feel pride when I succeed in implementing the technology recommended by field extension worker.

[female farmer, Indonesia]

In the Rwanda case, 53 percent of the FFS facilitators nationwide were women and women comprised 61 percent of FFSs nationally. Interviewed farmers stated that one of the most important changes resulting from their training was the shared roles by men and women in agricultural work. While women still dominated the farm activities, a female farmer reported that men were becoming more involved in agricultural work. Most women also said that they now had a say in decision making in their homes and the groups.

Building human capital in agriculture in youth has long-term effects on people's livelihoods and the economy. In the Mississippi case, we see this:



I tell everybody 100 percent that [non-formal education] is one of the reasons that I'm in the career field I'm in and the reason I majored in agriculture, because the importance of agriculture was instilled in me growing up, but it was really reinforced through [non-formal education], and all the cool opportunities that I had to do through [non-formal education], and the opportunities it gave me with other organizations... Mississippi Cattlemen's Association and the Junior Cattlemen's Association... meet professors from Mississippi State...in the Animal and Dairy Sciences Unit.

[female, non-formal education client, USA]

In Peru there has been a culture of exclusion of indigenous populations, which recent governments and organizations have sought to address. The Peru case attempted to achieve economic inclusion of poor, indigenous households through improving access to markets. One programme coordinator stated:



We cannot separate the human component from the technical one... farmers, especially the Andean farmer... require, after centuries of being marginalized and excluded, someone who will accompany them. This is highly gratifying for them.

[male coordinator, Peru]

Reaching persons with disabilities was not a large component of any of the cases. However, in the Kenya case, farmers living with disabilities experienced challenges participating in the programme due to insufficient resources or unavailability of compatible production infrastructure or machinery limiting their application of the skills and knowledge acquired.



In our farming, we wish [that] we could get tractors that use hands. It can help the handicapped to farm easily.

[female farmer with disability, Kenya]

The Kenyan model was seen to be best suited to small-scale horticulture producers, whether they be men, women, youth, or persons living with disabilities. Participation in the programme requires manual/physical labour, however, there could feasibly be cases of disadvantaged persons unable to undertake some of the tasks, or who would have to work at a slower pace. It is therefore important to consider and address the needs of persons with disability to provide the necessary equipment or other support.

In the West and Central Africa case, cooperative members and leaders noted new recruitment of appropriately qualified staff (particularly accountants), establishment of organisational premises, improved record-keeping, regular meetings, greater transparency (sharing information with members), and elections (all aspects of internal and financial management) as a result of the programme. These changes (some key informants called it a transformation) gave members more confidence in their organizations and therefore promoted stronger participation and inclusion among member farmers.

5.4.3 Impacts on social capital and social cohesion

Benefits did not only accrue to individual producers. Relationships and social cohesion were also improved as a result of some of the agriculture human capital investment cases. While social skills have been covered in section 5.2.2, this current section deals with individuals in a social context. Social capital is collective capital belonging to a group.

The strengthening of producers' associations was an outcome of the Chile model, although this was not one of its goals. As an example, associative companies in the honey and berry industries managed to grow into trading companies or become exporters. Producers that were not cooperative members also benefitted from the chance to cooperate and coordinate with fellow programme users, because each alliance managed to generate a stable group of producers that worked together, allowing peer learning and price negotiation. *"In the first place there is organization. A lonely farmer is very small in the market, but when organising along with other farmers and [the National Agriculture Development Institute] there is room for improvement, getting better rates"* stated a male meat producer. Associating also helped them access investment resources or purchase machines and agricultural inputs for collective use.

In Kenya, there was improved collaboration of couples in planning, budgeting and decision making and sharing roles. This led to better relationships within households. At the group level, changes reported included improved group management, enhanced group leadership, better coordination of production, and collective marketing, among others. One woman stated:



My relationship with my husband has changed. We now work together as joint decision makers for our farm. We work together for our farming business. [female farmer, Kenya]

The West and Central Africa case showed links between social capital and human capital. The programmes professionalised producer organizations, and as a result, individuals were thought to benefit. A further benefit was seen when the cooperatives and business digital platforms were used for health messaging about COVID-19. One company in Côte d'Ivoire used a traceability app to reach over 1200 cooperative leaders, and as a result, farmers raised local awareness on coronavirus and amplified information on government measures and advice.

In the Indonesia case, interviewees revealed that the duration of membership or involvement in the farmer groups contributed to broadening knowledge of farmers in cocoa production. There proved to be a connection between the length of farmer group membership and the knowledge and skills of farmers in cocoa production.

The Rwanda case also saw a connection between human capital and social capital. Through FFS groups, farmers' confidence in themselves and as a group was enhanced. The participatory approach fostered healthier relationships and cohesiveness of the groups. A female farmer said, *"By being a member of a farmer field school group, I have been able to improve my inter-person relationships and I am no longer a loner."* Working in a group fostered a sense of belonging and inclusion.





Chapter 6

Discussion

Based on the case study findings and examples from the boxes and literature, we go back to our research question: what makes a model successful in building agriculture human capital? We will explore several elements that contributed to the models' success in this chapter.

6.1. WHAT MAKES A MODEL SUCCESSFUL IN BUILDING HUMAN CAPITAL?

6.1.1 Delivery methods are appropriate for target groups and inclusive

The successful examples and cases fitted delivery methods to the target groups, and many of them ensured inclusion. McNamara (2020) notes the wide variety of types of human capital development. Models are successful when they appropriately target clientele and when they work with local social realities to include marginalised groups such as women, youth, livestock farmers (Box 4) and landless farmers (Indonesia). Spaces for learning can also be inclusive: The backyard gardens in Brazil (Box 9) allowed women to learn about productive, sustainable and technological innovations and helped manifest their knowledge and practices while preserving biodiversity and seed varieties. The food heritage project in Kenya consciously ensured that youth and women participated (Box 10).

One traditional approach that remains appropriate for the target groups was the use of demonstration plots. Rwanda's extension programme used field plots as the "classrooms" with a "seeing is believing" motto. The plots provided practical evidence without needing complex explanations to understand the technologies and innovations.

In other scenarios, distance methods become appropriate. In Kazakhstan, a dairy project used a digital platform and app to strengthen human capital (Box 8). Community livestock service providers in India used WhatsApp for consultation with master trainers or veterinarians, peer support, reporting and to share videos of good practices; cattle farmers in Colombia also used WhatsApp (Box 7). In Rwanda, extension agents used WhatsApp to reach farmers during lockdown. Box 12 highlights remote extension delivery during COVID-19. Radio can work as a successful learning format for hard-to-reach farmers and communities, particularly when facing natural disasters or other disruptions (Box 11).

Social learning is an important delivery method (Bandura 1962), and peer-to-peer approaches can thus be effective. The power of peer trainers was tapped in India (community service providers), Indonesia (lead farmers and cocoa doctors), Peru (community promoters), and Rwanda (FFS facilitators and promoters). Being members of the local communities, they can more easily reach farmers in their community, understood farmers' needs and speak the local language.

The India case purposively selected women as community service providers and master trainers. However, the model also employed a strategy of peer learning, which fostered self-confidence and provided role models. This model possibly affected roles in the community – educating women as experts can change not only perceptions among the trained women but women in general.



SCHOOL ON AIR FARMER RADIO CERTIFICATION IN THE PHILIPPINES

Villages in the Cordillera Region of the Philippines are largely inaccessible due to poor roads and communication networks, which contributes to lack of agricultural know-how in rural communities. In response, the IFAD financed Second Cordillera Highland Agricultural Resource Management Project implemented the School on Air (SOA) programme providing agricultural knowledge through on-air courses.

The SOA enrolled members of organised farmer groups in every province. In partnership with local government units, academic institutions, and radio stations, the project developed modules and communication materials. Modules were commodity-based with series of lessons aired every Monday, Wednesday, and Friday at timings compatible with household chores. At the end of each lesson, the farmer-students answered questions and submitted their responses to a designated village SOA facilitator. Students also demonstrated practical skills learned. SOA village facilitators clarified some lessons and in some cases farmer-students sent their queries and feedback to the SOA organised via mobile phones. A team from the local government and the project assessed student performance. Certificates were issued to those who completed the sessions and the practicum.

A total of 1363 farmer-students (80 percent) successfully completed the SOA programme. In addition, around 40 000 farmers who listened to SOA lessons also benefited. An SOA assessment showed that farmer-students, even those who did not enrol, acquired knowledge, skills, and self-confidence that contributed to improved farming and livelihood practices. Furthermore, relationships were strengthened, farmer-to-farmer knowledge exchange was encouraged, and community values of helping one another were reinforced.

The success of the programme was largely attributed to its highly participative nature and the strong partnership with local government, radio stations, and local groups. Radio enabled outreach to remote areas. Many villagers who participated in the SOA have become community-based extensionists.

More information: <http://apiras.net/charmp2-school-on-air-janice-b-agrifino-and-crislyn-b-orcales/>; <https://www.ifad.org/en/web/operations/project/id/1100001395>

Youth inclusion was a trend by IFIs that has been mentioned by key informants in Chapter 2.4. The model in Cameroon was well suited for youth, providing work experience to young people and building bonds with older professionals who served as tutors and role models. The integration project allowed them to apply what they had learned and to build social and professional networks. In areas where jobs are scarce, apprenticeships and on-the-job training can be a successful method of human capital investment, particularly for youth (Box 5).

Another group of farmers that are at risk of being excluded from human capital development models are those with either very little or no land in their names. The design of the model implemented in Indonesia ensured that all participating farmers obtained access to training on cocoa cultivation regardless of the size of their land allocated to cocoa plantation. Landless farmers were included in the learning process by working with neighbouring farmers.

In Ethiopia (Box 4), the pastoralist farmer training centres were an important way to extend learning to livestock keepers, who are nomadic and hard to reach. The India case was a livestock component of a larger rural development project. Given the major role of women, especially from marginal and landless households in the small ruminant sector, there were a large number of women livestock farmers and community service providers working towards improved management practices of livestock. The India model successfully reached women livestock owners in part because they worked with societal and gender norms.

In the USA, utilisation of technology for reaching target groups was important. While respondents found that face-to-face communication will always have a place, technology can allow for a wider audience and/or a more diverse audience. The use of technology does not have to exist only as a one-way information sharing relationship. It can also provide a path for collaboration, discussion, market connections, and technical support.

In West and Central Africa, master training of trainer-coaches was usually in-person; however, the drive to reduce costs coupled with travel restrictions associated with COVID-19 led to rapid development of a blended learning approach (live video links and self-paced online content, including “teach back” sessions allowing trainers to demonstrate their ability to teach the content in the manner expected).

6.1.2 Ownership in the learning process builds intrinsic motivation

The series of trainings on smallholder horticulture empowerment in Kenya were based on the self-determination theory, which recognises that raising people’s motivation increases their likelihood of continuing with implementation of intervention activities on their own (Deci and Flaste 1995; Deci and Ryan 1985; Japan International Cooperation Agency, 2016b).

The integration projects that young learners conducted in Cameroon helped them to determine their own course of learning. The learners would choose, design and implement their integration project as a parallel activity to the work-study training. They received guidance, rather than prescription, from the trainers. This philosophy was a major part of the model and aided the youths’ ownership of their projects as well as their learning.

In India, incorporating target group members as individual skills providers (community service providers, master trainers etc.) ensured an embedded ownership of the model among the target group.

Finally, as discussed in the final capstone event from the study, it is important to recognise indigenous knowledge systems even as we promote formal training. This is an important motivator for participants, as with the Ogiek honey producers (Box 10).

6.1.3 Opportunities first, skills second – understanding the farmer’s incentive for learning

As seen throughout the case studies, gaining market access was a strong incentive for farmers to learn. Chile, Peru, Indonesia, West and Central Africa and Kenya all aimed to link small-scale farmers to a steady market channel.

The Chilean farmers were incentivised by specialised technical support and access to stable markets. Technical field visits allowed them to deal with specific production issues, productive aspects, and managerial and economic factors (e.g., data and accounting records). The regular commercialisation link, while offering lower prices than the market price, was important for small-scale producers to ensure financial stability.

The West and Central Africa and Kenya cases demonstrated an integrated understanding in the model that a precondition for farmers to engage in learning and innovating was for them to understand what impact new skills could have on their livelihood – for instance via gaining a favourable market access. In these cases, market incentives were an integral part of the model. The model used farmer organizations to help farmers access training and markets. Thus, it was a key facilitator of farmer ability and incentive to adopt productivity-enhancing sustainable practices that improve market access. In Kenya, the model succeeded in changing farmers’ mindsets and behaviour because their motivation was increased through first showing market opportunities and then supporting farmer independence in decision making. This motivational aspect of the model was crucial for human capital development.

Skill sets in Cameroon were designed based on identifying ten agriculture-related professions that youth could pursue. Here, instead of a market channel, the opportunity to become something – a master of a trade or a professional – was the driving force behind the motivation to learn.

These findings show the importance of incentivising learning based on the farmer realities. If farmers are eager to improve their livelihoods through market access, the motivation for learning becomes internal. Therefore, it is important to show participants the opportunities that the enhancement of their human capital can bring *first*, and *second*, support them in increasing their human capital. Skills must be linked with markets or other relevant incentives for improved livelihoods.

MAINTAINING EXTENSION SERVICES DURING THE COVID-19 PANDEMIC: LESSONS FOR THE FUTURE FROM IFAD

The COVID-19 crisis disrupted farmers' access to seeds, inputs and services and markets, requiring new capacities to adapt. Extension was constrained, notably with group trainings in classrooms and fields. IFAD-funded projects developed mechanisms to quickly identify farmer needs and ensure that critical extension services remain functional.

Many projects leveraged social media platforms to ensure real-time communication between farmer groups and extension. These platforms facilitated sharing and scaling up innovations. For instance, the Kenya Cereal Enhancement Programme-Climate Resilient Agricultural Livelihood Window programme used WhatsApp to coordinate project activities and provide extension services, including farming guidelines and needs-based support.

Other IFAD-funded projects used mobile phones, apps and digital platforms to expand farmers' access to information. In Zambia, the Enhanced Smallholder Livestock Improvement Programme piloted an online extension platform aggregating the latest agricultural innovations and linking local extension officers with farmers via mobile phone. Other projects set up toll free call centres for farmers to call experts and suppliers. In areas where mobile network connectivity was poor, radio messaging was used.

The projects also used decentralised farmer groups and lead farmers to provide last-mile extension and facilitate peer-to-peer learning, playing a crucial role in bridging the digital divide during COVID-19. In India, as district extension workers could not travel, IFAD projects enhanced remote backstopping of lead farmers by preparing pre-recorded videos and picture-based materials to provide quality training to their peers without access to ICT-based services. This video support allowed the project to train farmers to produce their own inputs and feed when the supply was blocked. These farmers could now train their peers in smaller groups.

All in all, the cases show the added value of ICT solutions in association with inclusive and responsive decentralised extension services and grassroots networks.

More information: <https://www.ifad.org/en/web/latest/blog/asset/41957955>;
<https://www.ifad.org/en/web/latest/blog/asset/41914378>

Other examples that we saw as important incentives for learning were a) the prospect of protecting local food heritage (Box 9); b) becoming more resilient in the face of climate change-induced droughts and floods in India; c) reducing labour-intensive workloads as was the case for women in Kenya, when gender awareness resulted in wives and husbands sharing tasks more equally; and d) gaining an improved sense of independence and self-esteem as with youth in Cameroon who with increased skills started up their own businesses.

6.1.4 Use integrated approaches

With holistically integrated approaches, models of agriculture human capital investment go beyond technology transfer and include market linkages, value chain approaches, or entrepreneurship. They use multiple forms of delivery methods to impart a wide range of skills including technical, functional, and personal, and provides links to markets or other programmes that can support the human capital development. As seen in Section 5.2, a number of the cases imparted a wide range of skills. Many of the cases also strengthened producer capacity while linking them to market.

The Chile case enhanced creation of commercial partnerships between small farmers and larger companies. It funded and facilitated conditions for the acquisition of skills and human capital among the farmers to ensure its success. But its main focus was the value chain integration of the smallholders.

As a public-private-producer partnership, the Indonesia model had strong market and community elements. The private sector invested in providing a research and development centre for cocoa production. Companies received premium cocoa beans quality from the producers whom they helped train. The national government provided further education for farmer and woman farmers, and the local government developed further training for extension worker and facilitators. The producers improved their competencies in cocoa farming and business to respond to the market.

The smallholder horticulture empowerment in Kenya also provided market integration, as one smallholder stated:



For me what was outstanding in [the programme] is the issue of starting with the market. Growing to sell rather than growing and sell. In most of the other approaches, a project would concentrate on increasing productivity, would train farmers on better agronomy practices or sometimes even give them some things to increase production. In [the programme] it was first the market. I think that was quite a deal changer because now farmers grow knowing exactly where to take the produce.

[female farmer, Kenya]

As a result of the unique approach design of the Kenya model, holistic competence development was realised. This encompassed the spectrum of technical, managerial, and soft skills and knowledge which were important in farmers' human capital development.



[The programme] is all-round inclusive. Not only talking about the market, we are talking about production also, good agricultural practices, we are talking about cost-cutting issues, we're empowering farmers to make decisions. It is actually farmer-driven. You empower the farmers collectively and then once they have the knowledge they do things, almost everything by themselves. The motivation of the farmer comes from within not the way where the technical officer of the ministry would tell the farmer what to do.

[female farmer, Kenya]

The Rwanda national extension system is a cascading design that reaches every village in the country by combining FFSs with local farmer promoters. Both facilitators and promoters are farmers. The programme is implemented by local government, the agriculture ministry, and another government agricultural body, along with nongovernmental organizations and other partners. This complementary nature of FFS contributed to its success.

As more and more investors move to using agriculture human capital investment as a sub-component of larger projects (Section 3.3), it is important to ensure that the holistic integration goes beyond just the human capital element (i.e., the model) and that the project components are complementary as well.

AGRICULTURE SECTOR EDUCATION TRAINING IN SOUTH AFRICA

The Agriculture Sector Education Training Authority (AgriSETA) in South Africa is one of the 21 Sector Education and Training Authorities (SETA) established to close skills gaps. Parallel to the basic and higher education system, AgriSETA facilitates access to formal and informal skills development. The formal part focuses on animal and plant production and mixed farming. The SETA also supports higher education skills development. Informal education includes vocational training, internships and other related skills that are priorities.

The AgriSETA approach covers all aspects of agricultural value chains identified as scarce and critical skills through a consultative skill planning process. Learning modalities include professional, vocational, technical, and academic learning, bursaries for tertiary studies or in-service training, apprentices, internships and mentorships. Adult learning of farm workers equips them with basic skills such as numeracy, language literacy, business skills, and occupational health and safety. There is also special focus of youth career development and mentorship of new and upcoming farmers in rural areas.

The SETA system is implemented through accredited service providers from all sectors. Each service provider must meet minimum standards defined by the South Africa Qualification Authority. This system provides a regulatory framework with incentives for the private sector to invest in the human capital of their employees through a mandatory grant. For example, 1 percent of the levy paid by a private-sector company to the South Africa Revenue Services (SARS) goes to the sector specific SETAs. On an annual basis, companies should develop a Workplace Skills Plan to build capacities of employees (including farm workers). When companies submit their Annual Training Report (as proof of training) and grant application to the SETA, they are eligible to claim back 20 percent of the skills levies paid to SARS.

AgriSETA gives a practical example of a massive government-led, yet independent and sustainable human capital investment option. It leverages public-private partnerships for both implementation and governance. It is an institutionalised system that allows farmers to progress from informal to formal learning at their own pace. Trainees at various levels can accumulate recognised credits that can potentially lead to a full formal qualification such as a national certificate, diploma or degree.

More information: <https://www.agriseta.co.za/>

In the USA case, integrated approaches enhanced the development of human capital in agriculture. Agency representatives perceived that collaboration broadened the base of expertise available to clients, leveraged complementary resources to meet diverse audience needs, and created new initiatives.

Each agency-representative interviewee spoke of how inter-agency collaboration in the USA system contributed to agriculture human capital development in the state. One interviewee stated:

“

In Mississippi (USA), we're very fortunate to have a great network of organizations that work together to build that collaborative agriculture community and engage those different groups. We all realize that we are in this thing together and we are much more successful by working with each other than against each other.

[female advocacy group representative, USA]

The Cameroon model was based on three core elements: a training centre, family or community and a professional environment. This provided local anchoring for the young people's integration projects and contributed to programme sustainability. The contextualised training content, being part of local life in communities and with a focus on practical capacities, coupled with theoretical knowledge, allowed young people to obtain professional training that was relevant and culturally acceptable. The involvement of families in training during the work-study phases in a socio-professional environment allowed learners to develop the sociocultural capacities necessary to succeed in their social integration in the community. Coordination and integration are critical in this cascade approach to support the programme technically and financially.

The learning approach itself can also be holistically integrated. Nearly all the models used a variety of delivery methods: demonstrations, market visits, classroom sessions or internships. Several of the models followed up training with coaching and mentoring to reinforce learning and practice new skills. Some skills are difficult to learn in the classroom or to be demonstrated and can only be “learned by doing.” Therefore, on-the-job training, apprenticeships, internships, coaching and mentoring of learners are important.

6.2. SCALING UP AND INSTITUTIONALISING SUCCESSFUL MODELS

Scalability, replicability and institutionalisation are important factors for investment and for value of the models. Going beyond donor implementation is important for institutionalisation.

In Rwanda, mainstreaming of the FFS approach into the national extension system, linking it to the local farmer promoters in every village and financial support from public-private partnerships contributed to its institutionalisation and scaling up. Before the current extension model, 32 percent of farmers accessed extension; currently 86 percent do. The Rwandan case shows that – given the appropriate enabling environment (policy support) and financial support – the FFS approach can be scaled up or institutionalised.

Although the Kenyan model focused on horticulture, the approach found application to other value chains such as dairy and poultry, showing its versatility in developing human capital in agriculture. The flexibility and adaptability of the approach allowed such scaling out. In addition, other national projects and NGOs adopted the model. In addition, the model was scaled up to 30 other countries. This was possible because the model worked as a complementary intervention to existing extension services or other agricultural projects and programmes and works for multiple value chains.

The Agriculture Sector Education Training Authority in South Africa (Box 13) helped to institutionalise skills building across the agricultural sector. While government-led, it is an independent and sustainable human capital investment option that leverages on public-private partnerships for both implementation and governance

Several of the cases (India, Indonesia, Peru and Rwanda) amplified training and reach through cascading models where formal extension or other programmes worked with community promoters or lead farmers, thus allowing more human capital to be built. The West and Central Africa case extended their reach using last mile retailers (input suppliers) and model farmers.

6.3. SUSTAINING SUCCESSFUL MODELS

Sustainability means that the model of agriculture human capital investment will persist over time regarding funding, ownership and organisational structure and incentive mechanisms. It can include technical, political, social, institutional and financial dimensions (FAO, 2018). Thus, supporting policies, institutions and local capacities help support sustainability.

Many of the models had a mixture of public, private, bilateral or multilateral donors or grant makers, and NGOs contributing as well. Sustainability does not mean that an initiative is completely funded by farmers or the private sector, it in fact means that parties are willing to support costs (because they see it as an investment).

Considering the limitations of government funding, public-private-producer partnerships in Indonesia were considered important for additional financial resources, sharing risks and addressing other constraints in pursuit of sustainable and inclusive agricultural development. The project introduced public-private-producer partnerships to strengthen farmers' human capital using private sector facilities. Through the partnership, the farmers received technical support to meet international market standards for cocoa. A key informant explained:



The [public-private-producer partnership] is one of the strategies for resource sharing in agricultural development. I understand that every actor in the partnership has specific interests. In this case, I hope that private partners have better understanding about the farmers' needs. It is important the farmers receive fair price for their products. So, improving bargaining positions of farmers and farmer groups is essential.

[male project manager, Indonesia]

In India, convergence with government departments and schemes was an important consideration for sustainability. Subsidies helped farmers to adopt practices. While there are pros and cons to subsidies, community service providers should leverage the government system and access available resources. This implies training and equipping them to connect with government systems and their acceptance by the systems.

In Box 13, companies claimed back part of the levies they paid into the Agriculture Sector Education Training Authorities when they showed proof of training. Similar to the case of Mississippi, these mechanisms helped establish long-term institutionalised funding models that are important for sustaining human capital development. In Box 4 we saw that mobilising local resources and contributions from regional government and communities helped make human capital interventions more sustainable with pastoralist training centres.

In Rwanda, according to the case study authors, the main limitation of the FFS approach was its cost. The intense training activities were expensive as measured by the cost incurred per farmer trained. Therefore, FFS implementers should consider cost-sharing strategies to ensure financial sustainability. Cost-effectiveness and financial sustainability could be improved if farmers partially or fully fund activities. Amplifying through cascading models certainly helps.

Limitations to the sustainability of several of the models existed. In Chile, results showed that while small producers developed capacities, it appeared that the alliance could not be sustained after the programme. Without programme support, producers would not be able to cover the full costs of maintaining production quantity and quality, such as paying for specialised advice. Also, despite linking producers to more stable market channels, they still face risks. Producers believed that they needed permanent support. This means that the model would continue to require support from the government to maintain the current elements.

In the West and Central Africa case, the role of the off-taker was key to drive implementation and provide a critical market link. As a project supported by the International Finance Corporation (IFC), implementation costs were shared between the off-takers and the IFC. Some interviewees stated that the public good content of such programmes and their apparent relevance to much wider contexts (i.e., beyond such consolidated value chains) justifies 100 percent public funding for wider roll-out of the approach. However, involving the off-taker and ensuring their commitment to farmer organization suppliers was critical.

The Cameroon case included a “multifunctional” vision of training centres and schools, accountable at all levels. This resulted realising the full costs of the training and integration of young professionals. The costs also include family contributions (i.e., opportunity cost of the young learner’s absence). The mechanism for funding the project included bilateral funding from France. Thus, as a development project, the question of financial sustainability of the model is important. The strategy for perpetuating the model means transferring functions currently provided by the programme to other state and regional actors.

McNamara (2020) calls for more documentation of sustainability in projects and for studies on sustainability of benefits and impacts, particularly for private sector extension. The process of developing human capital in agriculture is an investment, requiring time, effort and funding. While literature does show returns on investment to education, research and extension (Alston *et al.*, 2000; Huffman, 1974; and a summary by McNamara, 2020), not enough is known about investment in human capital *for producers* using the models we have discussed here. There may be trade-offs that investors consider when attempting to develop human capital in agricultural producers.

Chapter 7

Directions for future investment in farmers

We now provide recommendations based on the study findings for investing in agriculture human capital of producers. Most of the recommendations are synergistic and will be more effective if carried out together. We summarise them in Figure 7 and will provide greater detail in the rest of the chapter.



Figure 7

Key recommendations for investing in farmers

SOURCE: Authors' own elaboration.

7.1. INVEST MORE IN AGRICULTURE HUMAN CAPITAL OF PRODUCERS

1

First, we recommend that investments be significantly increased in agriculture human capital of producers. Agriculture human capital investment leads to outcomes and impacts in the medium and long term and has many positive societal spill-overs, such as increased rural incomes, literacy improvements, food security and health. While human capital investments may have effects that are difficult to measure with return frameworks that are hard to predict, it is critical to invest in such capital *because* the results are long-term and wide reaching. Furthermore, human capital cannot easily be eroded or destroyed like other types of capital. In today's dynamic environment it is important to incorporate agriculture human capital investment in many, if not all types of agriculture and rural development investment projects (e.g., value chains, market access and climate mitigation and adaptation).

Another important area to be addressed is the basic literacy and numeracy of farmers as a foundation for further human capital development. Some investors have supported successful literacy programmes and this should be considered where necessary. Digital literacy is another important area of human capital development.

7.2 PARTNERSHIP AND COLLABORATION ARE CRUCIAL FOR GREATER IMPACT

2

To get more investment, we need to partner and collaborate, first at the policy level since investment is always constrained or enabled by the existing policy environment. Each of our case studies highlighted the political and policy landscape by first sharing key agricultural, human capital and enabling environment indicators because they have such an influence on human capital investment. Human capital development is cross cutting and interdisciplinary by nature, so policies that support and provide incentives for interdisciplinary and multi-sectoral approaches are crucial for enabling agriculture human capital development more generally.

Commitment of national leadership and policymakers is necessary for increasing investment. Political will can be taken advantage of – or, if necessary, generated. In Cameroon we saw the existence of political will to promote agricultural vocational training and to involve local stakeholders in the co-management and co-animation of the system.

Political will can be further generated through multi-stakeholder partnerships in investment programmes and projects. Partnering can: a) ensure holistic integration; b) provide opportunities and incentives for learners; c) help sustain the farmer capacity building efforts through multiple funding channels; and d) help take successful programmes to scale.

Incorporating partners into agriculture human capital investment models can facilitate a more holistic and integrated approach as the involvement of different stakeholders brings different perspectives and possibilities that can be leveraged to the benefit of farmers. As we saw in Chapter 6, it is important to consider a variety of incentives as well, including market incentives. This implies engaging markets and the private sector in most, if not all, human capital investment initiatives in agriculture.

Partnering can further benefit funding streams and support sustainability. Engaging private companies or the market is fundamental to the success of the overall programme that would like to achieve financial sustainability. Public funding can be sustainable assuming there is political

will to implement a programme. It is important to build relationships between the companies and the producers. For those investments that proactively engage the private sector, we recommend that incentives are provided to the private sector. Furthermore, there should be a good fit between companies and the small producers, as we saw in Chile.

Partnership is a critical element in scaling up successful approaches and models. Every situation is different, which is why it is important to consider the policy environment first. When scaling, whether in-country or to other countries, implementers should bear in mind that there is no applicable/transferable model for everywhere. Models must be adapted to the local conditions and target group as well as the policy environment.

Collaboration and networking were key elements of success in many of the cases. Synergistic approaches through interagency collaboration like the one found in the USA could be applied in other settings. There are some preconditions for this. First, individual partners must be successful on their own at building agriculture human capital. Second, collaborators must have resources that are complementary to other partners' resources. Third, they must jointly determine the nature of the relationship in terms of the purpose and vision, function, roles, resource sharing, levels of communication, trust and shared decision making. Also, especially with public-private-producer partnerships like in Indonesia, intensive dialogue, maintaining mutual trusts, respect and accountability among stakeholders will influence the effectiveness of the partnerships.

Strategies to implement partnerships must consider the following necessary conditions. First, public-private-producer partnerships require country/government support. Second, governance of the programme should be clear and all parties should have a shared understanding of the vision and mission regarding what constitutes successful development of human capital through the partnership. Third, support from the community is critical to ensure the clientele of the partnership are committed to participate. Fourth, it is essential to monitor and evaluate progress. Finally, implementers need to ensure staff competencies necessary at all levels.

3

7.3. THE DELIVERY METHOD MATTERS

Appropriate delivery methods need to consider the audience and adapt to their needs. Once an approach is found to be successful, investors and implementers like to keep using it, as in the case of FFSs. Approaches can only be replicated and scaled if there is some sort of standardisation or a “how-to” manual. A guide to implementing the approach can help assure quality control of the model and scale it where appropriate. However, there is a trade-off between standardisation and flexibility. As recommended by FAO, flexibility of programmes allows incorporation of feedback and adjustments of training activities as implementation continues (Oakley and Garforth, 1985). Therefore, implementation programmes (especially as they are scaled up) should not be static but adapted to the needs of the target training recipients. It helps to “standardise” the core principles but adapt the methodology, much as the FFSs approach has done. A customised approach might be more difficult and costly, but it is important to properly facilitate human capital development among clientele with an adequate fit.

As producers are learning, it is helpful to reinforce the skills. Several of the cases mentioned the importance of practical learning. Experiential learning (used in India) and alternating from theory to practice and relating experience back to theory (as in Cameroon) can help to reinforce skills that are learned. Mentoring by professionals was an important part of the Cameroon programme. The West and Central Africa case reinforced putting training into practice by follow up coaching. The individual coaching sessions provided by Cocoa Life to farmers in (Box 6). resulted in more efficient farming and improved farmer incomes and livelihoods.

Skills can also be reinforced by the power of social influence. Models from Kenya, Rwanda, and Peru used group approaches and/or community leaders to reinforce training.

Digital tools for delivering agriculture human capital development should be used with care. Digital technologies bring many benefits, such as the ability to reach greater audiences with cheaper costs. Digital approaches also have caveats: many people do not have access to or cannot afford digital tools. However, the COVID-19 crisis has induced digital innovation. Successful digital strategies requires policy and legal enabling environments, last mile connectivity, and consistent and reliable content.

7.4. ENSURE NO ONE IS LEFT BEHIND

4

The case studies and other evidence detailed in this report showed models of agriculture human capital investment that successfully targeted groups of farmers whose inclusion in development projects or programmes is not always a given. While selecting a target group that is typically marginalised is one thing (and an important one at that), designing and implementing a model of human capital development that actually facilitates these groups' inclusion is another.

Therefore, when investing in or designing an AHCI model, it is crucial to first understand the cultural, societal, and economic limitations to the participation of the young, indigenous, remote, poor, or female farmers. The methods, timing and location of the interventions can limit participation. One intangible, yet important limitation witnessed in the cases in Peru, India, and Cameroon entails the societal recognition of such groups, or rather the lack thereof. Understanding how to not only develop skills but also build confidence among learners is therefore a key feature of a model targeting farmers with unrecognised potentials. Other limitations could be purely logistical or financial – a model that succeeds in overcoming all these different limitations will be truly inclusive.

There are different reasons why implementers target youth in human capital investment programmes. However, as discussed in Chapter 2, human capital development is a long-term investment. We will see much of the pay-off in the future, and sometimes even decades later. This is why it is valuable to invest in young people, and in fact, IFIs are starting to prioritise youth engagement (Section 2.4). Offering learning opportunities where youth can acquire the hands-on experience, they might otherwise lack could be another. Here, integrating vocational training, apprenticeships or work-study mixed training in an AHCI model could prove valuable.

7.5. PROVIDE INCENTIVES FOR LEARNING

For agriculture human capital investment to be successful in building farmers' capital as well as sustaining its impact, intrinsic motivation of learners and incentives for their participation is key. This can be seen in the case of Chile with its access to stable markets and specialised technical support, and in India with its market access and insurance services.

One way to ensure motivation is by promoting ownership of the learning process by incorporating forms of participation and decision-making into the model design. Supporting farmers in designing their own development plans or choosing which crops they want to specialise in and thereafter providing the tools and skills needed for implementation is a key lesson from several of the case studies.

Feedback is likewise an important aspect of learner participation. Several of the successful cases were rooted in local demand and focused on continuous improvement through feedback management. It is important to have this type of participatory approach to remain relevant, empower local communities, and to be able to adapt to disruptive changes (Section 2.2). Actions must be based on a vision and values that are shared by all the actors involved. This makes it possible to build an original and contextualised model that avoids the methodological and technical toolboxes carried by certain donors or "specialist" consultants.

Continuous feedback allows for improvement and updating to optimise the implementation mechanism as circumstances and conditions necessitate. In one of the cases, we saw an app-based monitoring system in use. Local implementers or trainers can also provide important feedback on how the training is received and what else might be needed. In addition, knowledge exchange at the international level allows for the most relevant and current knowledge to inform the experiences in the field.

In addition, ensuring participation while creating and communicating incentives for learning is likewise fundamental to ensuring motivation. As we learned from our case studies (see section 6.1.3), farmers who clearly understood the opportunities that new skills could offer enjoyed high levels of self-determination and endurance when taking on the challenges of learning something new or changing (their) mindsets. Therefore, in implementing human capital development models, make sure that a) there is an incentive for learning, which is rooted in the needs and aspirations of farmers; b) incentives are clearly communicated and explored in collaboration with farmers; and c) that such incentives are attainable. If incentives remain out of reach despite the building of human capital, chances are that farmers will see no reason to learn the new practices in the first place. Many models integrated market access as a successful incentive for learning. It is however important to keep in mind that while economic incentives (increases in sales, yields, or incomes) are crucial, especially for poor households, many other reasons for learning also exist and can be equally incentivising. Improving self-confidence, recognition in one's community, better division of labour within families, or the preservation of cultural traditions are all incentives that relate more broadly to wellbeing, identities, and livelihoods, which can be realised when developing human capital (Friis-Hansen and Duveskog, 2012).

7.6. CONDUCT FURTHER RESEARCH ON IMPACTS OF INVESTING IN FARMERS

This study has provided some answers, but also many more research questions on agriculture human capital development, and considerations for more holistic evaluations of AHCI programmes.

McNamara's review paper (2020) outlines the ways and means for evaluators to measure rates of return for agriculture development projects with significant agriculture human capital development components. However, stakeholders at the technical workshop discussing the review paper concluded that evaluations of agriculture human capital investment should go beyond economic measures and include social, human and environmental impacts – requiring a much longer-term view. Better evaluations of the empowerment, agency and other impacts from AHCI are worth pursuing. Studies are still needed on rate of return, particularly to private sector AHCI, and the sustainability of such investment (McNamara, 2020).

As seen in the trends' analysis (Section 2.2) and discussed in the capstone event for this study, many IFIs incorporate human capital development as a *component* of agricultural projects rather than projects *solely* focused on human capital. It is thus important to examine the contribution that human capital investment made in these broader projects, ideally compared with projects without such investment. Future investments should predefine explicit human capital-related results and make project implementers more accountable for achieving them. This could be part of the project proposal development, and implementers be required to make explicit the human capital gains and how they will be developed and sustained.

Research is needed on specific elements of AHCI models. What is the interaction between the different types of human capital generated – is there some ideal mix? What are the economic trade-offs that investors should consider when designing human capital investment projects? What are high-impact investment options for investing in farmers? What are the long-term impacts from investing in farmers – for individuals, but also society some 10-20 years following the investment? How can we practically invest in social capital? Where should investors start, and where should they invest when resources are limited? Some good practices in this area would be of use. Much more research is also needed on the specific types of agriculture human capital investment: livestock and smaller crops; different geographical or agricultural settings; gender empowerment; and youth training, on the job training and farmer coaching (McNamara 2020). Does investment in vocational training have good returns on investment, both monetarily and with regard to societal gains? Is it the most appropriate way to up-skill young people for the formal or non-formal job market? Finding answers to these questions necessitates in-depth, comparative and longitudinal research broadening the understanding of AHCI, from rural learners to international decisionmakers and investors.

Further investigation into AHCI disaggregated by public, private, national, international, producer organizations, NGOs, and other funders would help understand who is investing, how and where. For instance, what do we know about country government funding for agricultural human capital investment? Many countries make substantial investments that go beyond donor funds. How do those amounts compare to donor flows of funds? How

do the various investments differ in quality or emphasis? Does donor funding for agriculture human capital development mobilise country funding or does it crowd it out? While agriculture human capital development remains primarily for the public good, we need to understand how and where the public sector should intervene and provide public funding, and how collaboration and partnership with other stakeholders can be unpacked to improve the impact of agriculture human capital development efforts.

More research is needed on women, youth, and special groups (e.g., pastoralists) and their human capital needs. With regards to the younger population, do agricultural human capital programmes lead to more rural youth staying in rural or peri-urban areas instead of migrating to urbanised areas, and if so, what factors must be considered? What are potential benefits and case studies where rural digital and other infrastructure improvements as paving the way for increased rural youth entrepreneurship? Does human capital specifically invested in women lead to enhanced outcomes and impacts? What are the best ways to build pastoralist human capital?

Finally, further research is needed to understand the interaction between different types of human capital investment and the impacts such as reduced poverty and hunger or increased incomes. What is the link between technical and functional skills in human capital development? What are the links between human capital and social capital, and between human capital and organisational capital? An improved understanding of the new and promising agriculture human capital investment options and their potential impacts will be critical to scaling up investments in farmers' capacities.



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Investing in farmers – or agriculture human capital – is crucial to addressing challenges in our agri-food systems. A global study carried out by the FAO Investment Centre and the International Food Policy Research Institute, with support from the CGIAR Research Programme on Policies, Institutions and Markets and the FAO Research and Extension Unit, looks at agriculture human capital investments, from recent trends to in-depth case studies in Cameroon, Chile, Côte d'Ivoire, India, Indonesia, Kenya, Peru, Rwanda and the United States of America. It also includes 11 promising cases, ranging from pastoralist training centres to the inclusion of indigenous communities. The global study aims to provide governments, international financial institutions, the private sector and other partners with the evidence and analysis needed to make more and better investments in agriculture human capital. This publication is part of the Directions in Investment series under the FAO Investment Centre's Knowledge for Investment (K4I) programme.

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