CGIAR Sustainable Finance

Impact Investment in Agriculture in Africa: A Case study of Ethiopia, Sudan, Mali, and Senegal

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Authors:

Christopher Agyekumhene[1]; Marie Ena Derenoncourt[2]; Ciniro Costa Jr[2]; Philemon Tetteh-Addo[1]; William Wathuta[1]; Richard Newman[2]; Godefroy Grosjean[2]

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Contact:

Marie Ena Derenoncourt
Gender-Smart Investment Specialist
CGIAR Hub for Sustainable Finance
Alliance of Bioversity International and CIAT
Email: m.derenoncourt@cgiar.org

[1] Financial Access Consulting Services B.V.

[2] The Alliance of Bioversity International and CIAT

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ABBREVIATIONS

ABS	Agricultural Bank of Sudan
AgDevCo	Africa Agricultural Development Company (Senegal)
ATA	Agricultural Transformation Agency (Ethiopia)
BFS	Bureau for Food Security (USA)
BNDA	National Bank of Agricultural Development (Mali)
CCAFS	Climate Change Agriculture and Food Security
CGIAR	Consortium of International Agricultural Research Centers
CFA	African Financial Community
CIAT	Center for Tropical Agriculture
CMDT	Malian Company for Textile Development
CNT	Coumba Nor Thiam (Senegal)
CSA	Climate Smart Agriculture
CSAIP	Climate Smart Agriculture Investment Plan
DFI	Development Financial Institution
EDFI-AgriFI	The European Development Finance Institution-Agriculture Financing Initiative
EFCCC	Environment Forest and Climate Change Commission
EUR	Euro
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
GAFSP	Global Agriculture and Food Security Program
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GHG	Green House Gases
GIZ	German Agency for International Cooperation
CII	Chemonics International Inc
GIIN	Global Impact Investors Network
GTP	Growth and Transformation Plan (Ethiopia)
HIPC	Heavily Indebted Poor Country
ICARDA	The International Center for Agricultural Research in Dry Area
IFC	International Finance Corporation
ITA	International Trade Administration
MFI	Microfinance Institution
NGO	Non-Governmental Organization
PPP	Private and Public Partnership
SARD-SC	Support to Agricultural Research for Development of Strategic Crops in Africa
SGI	Schulze Global Investment
SME	Small and Medium-Scale Enterprise
SOBEMA	Société des Boissons et Eaux Minérales du Mali
SODEFITEX	Société de Développement et des Fibres Textiles (Mali)
SSA	Sub-Saharan Africa
UKAid	United Kingdom Agency for International Development
USD	United States Dollar
USAID	United States Agency for International Development
WAEMU	West Africa Economic and Monetary Union

EXECUTIVE SUMMARY

Climate change is a growing threat to agricultural production in sub-Saharan Africa, leading to rising poverty and malnutrition. The timing, amount and intensity of rainfall are changing, the number and severity of droughts and floods are increasing, and rising temperatures are reducing crop productivity.

Climate smart agriculture (CSA) is an integrated approach to managing cropland, livestock, forests, and fisheries. Adapted to local conditions, it can increase productivity and therefore incomes and nutrition, make production more resilient, and reduce greenhouse gas (GHG) emissions. However, implementing CSA at scale will require huge investments, some USD 300-350 billion annually, in food and land systems transformation. Achieving this level of investment will require substantial, sustainable private investments to complement public investments (Global Alliance for the Future of Food, 2022).

To understand the impacts of recent investments as well as challenges and prospects for the future, CGIAR reviewed agricultural value chain investment experiences in four African countries: Senegal, Mali, Ethiopia, and Sudan. The study assessed existing impact investments, exploring the impact of the countries' investment environment, key challenges and opportunities and investment vehicle preferences for financing in each country.

The two primary instruments for deploying capital in the four study countries were debt and equity. Most investors use debt, which accounts for 75% of the total, but this depends on the investment opportunities and environment, for example exchange rate and currency conversion risks. The size of the deals identified in which the amounts were disclosed were relatively small, except in the barley value chain in Ethiopia which is supporting a rapidly expanding beer industry. Ethiopia can attract more sizeable investments if the challenges around foreign currency access are addressed.

For most of the impact investors interviewed, the competitive advantage of a value chain is a critical factor in its selection, and in particular, its ability to compete either against imports or on the global market. For example, the mango value chain in Senegal shows significant potential to attract investment. There is also a clear preference for processing activities within value chains as almost all investments in the four countries were at this level. This indicates both a drive towards value addition and an avoidance of production level risks. The cotton and mango value chains in Mali are examples of already-established export value chains that offer investment opportunities; the dairy industry is another example of a domestic value chain attracting investments.

The study identified other investment opportunities aimed at enhancing the quality and level of production of crops. Examples include sesame in Sudan, sorghum and barley in Ethiopia, livestock in Mali, and groundnut, vegetables, and rice in Senegal. No impact investment transaction was identified in Sudan. Direct development finance institutions' (DFI) interventions with grants and concessions may be required to catalyze investments following long periods of governance uncertainty in the country. In terms of inclusion, the study did not note clear gender considerations in the deal structuring. More deliberate measures are also required to ensure investments contribute to the resilience and mitigation pillars of CSA.

Based on these insights from existing impact investments in the four African countries, the study identified priority value chains with potential for CSA investment and characterized key investment opportunities within these value chains that could be attractive for investors given their country context. These investments include solar irrigation pumps, silo and warehouse financing, produce aggregation loans, among others. The priority value chains are outlined in the following table.

Mali	Senegal	Ethiopia	Sudan
Livestock	Groundnuts/Vegetables	Coffee	Groundnut
Cotton	Rice	Barley	Wheat
Cereals	Cotton	Sorghum	Sesame

The pathway from potential to actual CSA investment in these countries, however, remains fraught with challenges that will require strategic and deliberate measures to counter. Due diligence and finding reliable local partners will be critical to exploiting promising CSA investments within these value chains in a cost-effective manner. Governments need to address bottlenecks such as slow bureaucratic procedures.

Strategic use of grants and concessions through blended finance arrangements are critical to unlock support for capacity building as well as riskier elements like smallholder financing. This is also because some investments require multiple financing at various points of the value chain to be impactful. DFIs can work with governments and the private sector to reduce these risks and implement the most promising investments.

INTRODUCTION

In Africa, agriculture is by far the most important economic activity, especially in sub-Saharan Africa (SSA). It provides employment to about 60% of the population with most of them being smallholder farmers. The sector is the largest contributor to GDP in most countries and earns the most foreign exchange. However, agricultural production is increasingly threatened by the impacts of climate change: changes in the timing, amount, and intensity of rainfall, increasing number and severity of droughts and floods, and rising temperatures.

Climate smart agriculture (CSA) is an integrated approach to managing landscapes—cropland, livestock, forests, and fisheries. It aims to achieve three outcomes: 1) increased productivity to enhance incomes and nutrition; 2) enhanced resilience in the face of the impacts of climate change; and 3) reduced greenhouse gas (GHG) emissions. CSA systematically considers the synergies and trade-offs among productivity, adaptation, and mitigation (Matteoli et al., 2020). Successful implementation will substantially transform agro ecosystems in a sustainable manner. Given the diversity of agro ecosystems, this will require efforts to adapt the most appropriate CSA practices to each context. This process will require substantial investments. Although information on CSA investment needs in agriculture is limited, it has been estimated that large scale implementation of food and land systems transformation would cost approximately USD 300-350 billion annually by catalyzing sustainable financing mechanisms from private and public sources (Global Alliance for the Future of Food, 2020).

To achieve the required transformation of SSA agriculture to be resilient and productive while making efficient use of available resources, it is essential to understand what critical investments need to be made for the most impact and how to attract sustainable financing. An important early step towards this is to review the dynamics of past and on-going agricultural investments to harvest lessons for developing innovative CSA investment structures that are contextually appropriate and align with the needs and interests of both investors and investees.

To help the private sector and investors with this challenge, the CGIAR assessed the experiences of four African countries (Senegal, Mali, Ethiopia, and Sudan) to understand the impacts of recent investments as well as challenges and prospects for enabling innovative CSA investments. Specifically, we evaluated: (i) existing impact investment and financial instruments adopted; (ii) experiences with investing across different stakeholder levels in specific value chains; (iii) common business models in different biophysical and socio-economic contexts; (iv) enabling environments and implementation constraints; and (v) priority value chains for investment. We documented key elements such as regional performance and investment climates, as well as agricultural financing models in the different regions, analyzed the financial instruments utilized to deploy capital, and sampled investment models used by the surveyed investors. This provided a macroeconomic outlook on each of the target countries, their agricultural impact investment activities, the enabling and constraining environment at play, and potential CSA opportunities. Based on these assessments, high potential CSA investments in key value chains and corresponding financing schemes for each country context are identified and described.

METHODOLOGY

A five-step approach was followed to identify value chains where CSA impact investments could be feasibly made. The approach consisted of the following steps: (i) country context overview; (ii) mapping and profiling of in-country agriculture focused impact investments; (iii) scoping and identification of country key value chains for impact; (iv) value chain prioritization for potential investment; and (v) identification and characterization of prospective investment opportunities in priority value chains.

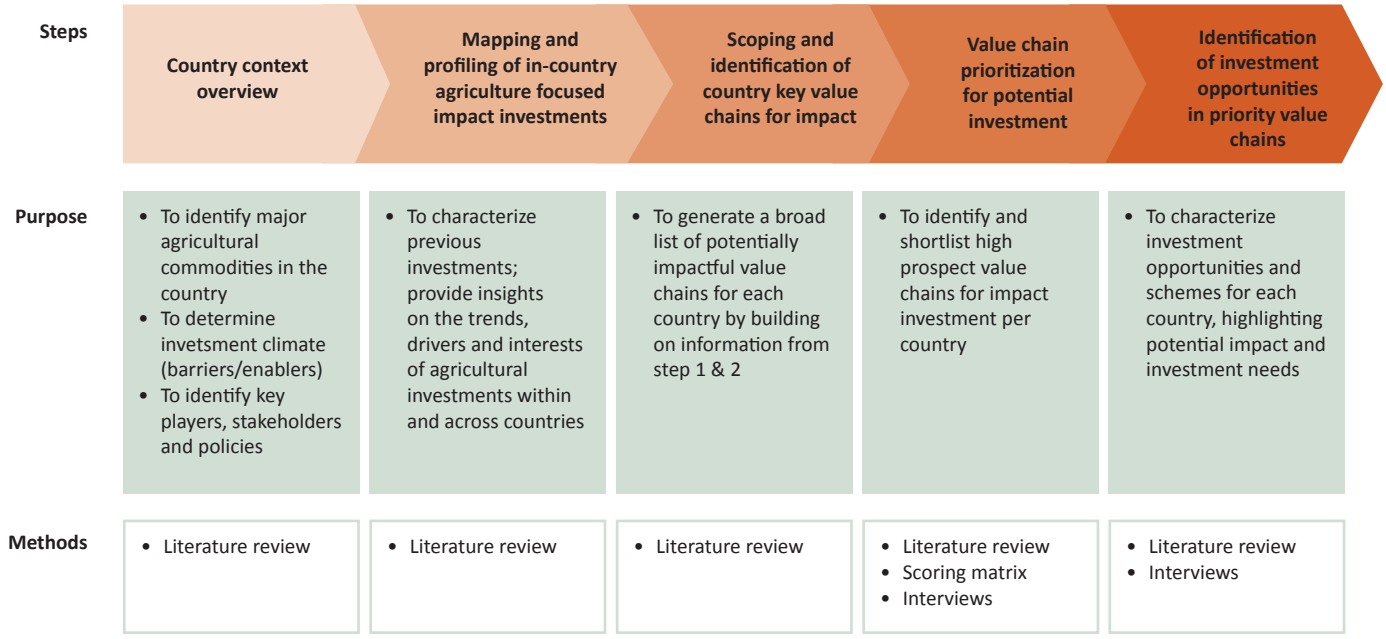

Figure 1 *Study methodology*

In the first step, we evaluated and characterized the economic, agricultural, and financing sectors of the four selected countries: Senegal, Mali, Ethiopia, and Sudan. These four countries provide different geographic perspectives, being located both in West and East Africa as well as diversity in their socio-cultural, economic, political, and environmental contexts. The purpose of this evaluation was to provide an overview of the investment climate and context within which past investments have been made and to identify how constraints and opportunities can be harnessed in potential future investments.

In the second step, we mapped and profiled investments that had been made in recent years in each country's agricultural landscape aimed at achieving impacts. The research focused on impact investments as defined by the Global Impact Investment Network (GIIN), that is, investments made into a company or organization with the intention to generate social and environmental impact alongside a financial return. We identified drivers of and constraints to the flow of sustainable finance to the agricultural sector. We defined 'recent' investments as investments deployed in the past six years, that is, between 2016 and 2021. This was then further complemented with additional investment information such as private equity and venture capital agricultural investments reported by investors that focused on enabling impacts. To ensure accuracy and reliability of the results, impact investors were categorized into two groups: DFIs and non-DFIs. DFIs are specialized development banks or subsidiaries set up to support private sector development in developing countries by providing financing on very competitive terms. They are usually majority-owned by national governments and source their capital from national or international development funds or benefit from government guarantees. Non-DFIs include all the other groups of impact investors that do not fall into this category. They consist of fund managers, financial institutions, NGOs, cooperatives, and private impact capital organizations. To prevent double attribution, investments made by managers of funds in

which DFIs contribute were classified under non-DFI investments, whereas DFI investments were restricted to direct interventions by the DFIs.

In the third step, we selected eight value chains (four cash crops and four food crops) in Ethiopia, Sudan, Mali, and Senegal. These were based on the following criteria: (i) quantity of crop production and consumption/export; (ii) number of smallholder farmers involved in the value chain; and (iii) an upward trend in the growth of the value chain over time. This selection process was conducted based on literature and data available on the main agricultural commodities per country. This process was not adopted in Mali, however, where we focused on the eight promising value chains already identified by the World Bank's Climate Smart Agriculture Investment Plans (CSAIPs).

The fourth step consisted of value chain prioritization, where additional selection criteria were used to narrow the list of eight value chains to a maximum of three main value chains per country. These criteria were chosen based on findings from a literature review and the preferences and considerations of impact investors. The criteria are listed in Table 1 and include the level of market development, including market access by key value chain actors as well as the strength of business relationships within the value chains, among others. A qualitative scoring matrix was developed based on these criteria and each value chain was allotted a score based on an evaluation of its performance against the selected criteria. For each criterion, a rating scale with the options, 'high,' 'medium-high', 'medium', 'medium-low', and 'low' is used to characterize the performance of the value chain vis-à-vis these criteria. The ratings were based on the degree to which literature findings and data available per value chain showed evidence or indications (high to low) of positive impact or relevance for a given criteria.

Three value chains with the highest scores on the matrix for each country were selected for the next phase of the study and further in-depth analysis. Further literature reviews were undertaken on the priority value chains to determine key problem areas and relevant opportunities to channel investment towards addressing these sustainably. Two to three investment opportunities were identified per country through this process; a total of eight opportunities are described in this report.

In the fifth step, we interviewed three to five stakeholders from each of the four countries on the priority value chains for validation, local level insights on the functioning of the chains, and prospects for investment. These interviewees were from different sectors, including private enterprises, non-governmental organizations, and investors, to ensure a broad range of perspectives were incorporated into the assessment. Through the interviews, the investment opportunities identified through the literature review were discussed and further revised, replaced, or added to. The study further estimated the investment ticket sizes for these opportunities based on the impact investment trends and records identified in the various countries. In the future, these estimates will need to be complemented with more in-country engagement and will likely vary based on the types of organizations and investors involved in the transaction. The detailed results for each country are in Appendix 1.

Table 1 *Value chain prioritization criteria*

Criteria	Description	Relevance
Level of business-to-business relationships and partnerships within the value chain (from producers to end consumers)	• How connected and formalized is the value chain from producer to consumer? • Are there gaps and challenges in the flow of commodities from level of the value chain to the next? • Are supporting actors such as financial institutions and transporters well entrenched within the value chain providing services to the key actors at different levels of the value chain?	Better integrated value chains are less risky and offer more concrete investment opportunities.
Level of private and public partnership (PPP) interventions in the value chain (includes targeted government and NGO intervention programs in the value chain)	• Which government programs, PPPs, NGOs etc. are running development activities in this value chain? • What level of the value chain are they involved in and what is the aim of their programs? • What have they achieved thus far? • Has this bettered the value chain in any way or will it do so in the future?	Value chains that are well supported by PPPs are less risky and offer more concrete investment opportunities without the need for additional TA support.
Trends in commodity production and consumption/demand	• Purpose is to highlight the growth of the value chain	Growth trends could offer insights into the potential underlying opportunities.
Level of market development including market access by key value chain actor	• Purpose is to highlight how easy it is for the actors to convert their commodities to cash. • Look at the market for each actor at different levels of the value chain and establish how structured these markets are. This will also include export markets especially for commodity processors.	Value chains with better market access are less risky to invest. Those with strong access to export markets could easily take up hard currency
Level of export (dollar and or euro) income generated per commodity	• Purpose is to highlight the contribution of the value chain to the country's economy.	Governments tend to focus their development agenda on value chains that earn the country export income.
Level of climate smart interventions within the value chain	• CSA initiatives already being implemented in the selected value chains will act as a key criterion in selecting value chains to focus on. • Identify and define the CSA activities for each value chain including their impact if any or potential impact as estimated by the implementors.	To highlight value chains that could benefit the most from immediate CSA interventions.
Level of other important inclusivity indicators in the value chain: youth and gender	• Number of youths involved in farming, processing and or transporting the commodities? • Number of women involved in farming, processing and or transporting the commodities?	To highlight value chains that could benefit the most from immediate interventions targeting these indicators.
Competitiveness of the value chain at the regional level (yields and pricing)	• Purpose is to indicate how advanced the value chain is compared to others in the same region.	More competitive value chains tend to be well structured and offer more concrete opportunities.
Potential for smallholder impact	• What has the growth of smallholders been like in the value chain over the last 5 years? • How many smallholders are currently involved in the value chain? • How is the figure projected to change in the future?	To identify and focus on value chains which have a high concentration of smallholder farmers.

Criteria	Description	Relevance
Trends in impact investors' participation in the value chain	• Which impact investors have invested in the value chain over the last 10 years? What financing tool did they utilize? (Debt Equity etc.) • What level of the value chain did they invest in? • Has the trend been growing or reducing over the last 10 years?	Could act as a vote of confidence for other impact investors.
Level of access to finance by key actors in the value chain	• Review related articles to identify whether Banks and MFIs are actively involved in the value chains disbursing loan to the various value actors (producers, processors etc.)	Better access to finance enhances value chain productivity thus decreasing the risk of investment in such value chains. It also provides better opportunities for the deployment loan loss guarantee arrangements.

KEY FINDINGS

This section outlines the main conclusions and lessons emerging across the four countries, drawing on the country specific analysis in Appendix 1. It presents an overview of the country investments, key actors, investment deal sizes, financing instrument and value chain preferences, investment enablers and constraints, potential investment impact and prospective CSA investment pathways.

Investment overview

Figure 2 shows a snapshot of the investments identified across the focus countries. The rest of this section reflects more granularly on the details of these investments and provides insights based on comparative assessments of Mali, Ethiopia, and Senegal. In the case of Sudan, we did not find clear evidence of impact investment in the agricultural sector over the timeframe under consideration. This was likely influenced by the country being associated with terrorism by other countries like the United States of America until the year 2020.

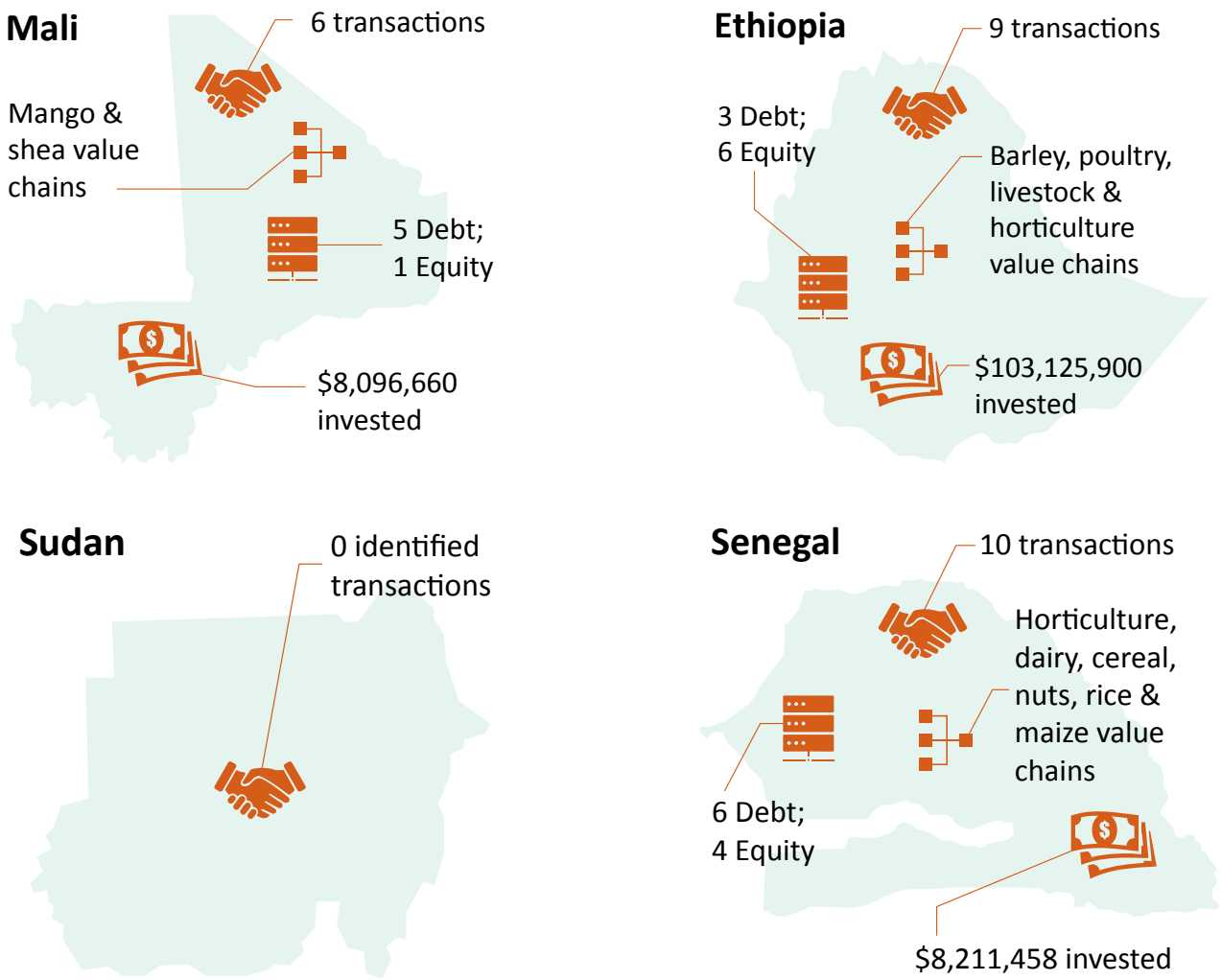

Figure 2 *Snapshot of country investments*

Key actors (investors and investees)

The study found several categories of investors involved across the four countries. DFIs remain key actors in driving impact investments, with at least one direct investment in each country and making contributions to other impact investment funds in some cases. Investees cut across various value chains and range from long established organizations to relatively new companies such as Mali-Shi, which was founded in 2019. Figure 3 presents an overview of investors and investees identified.

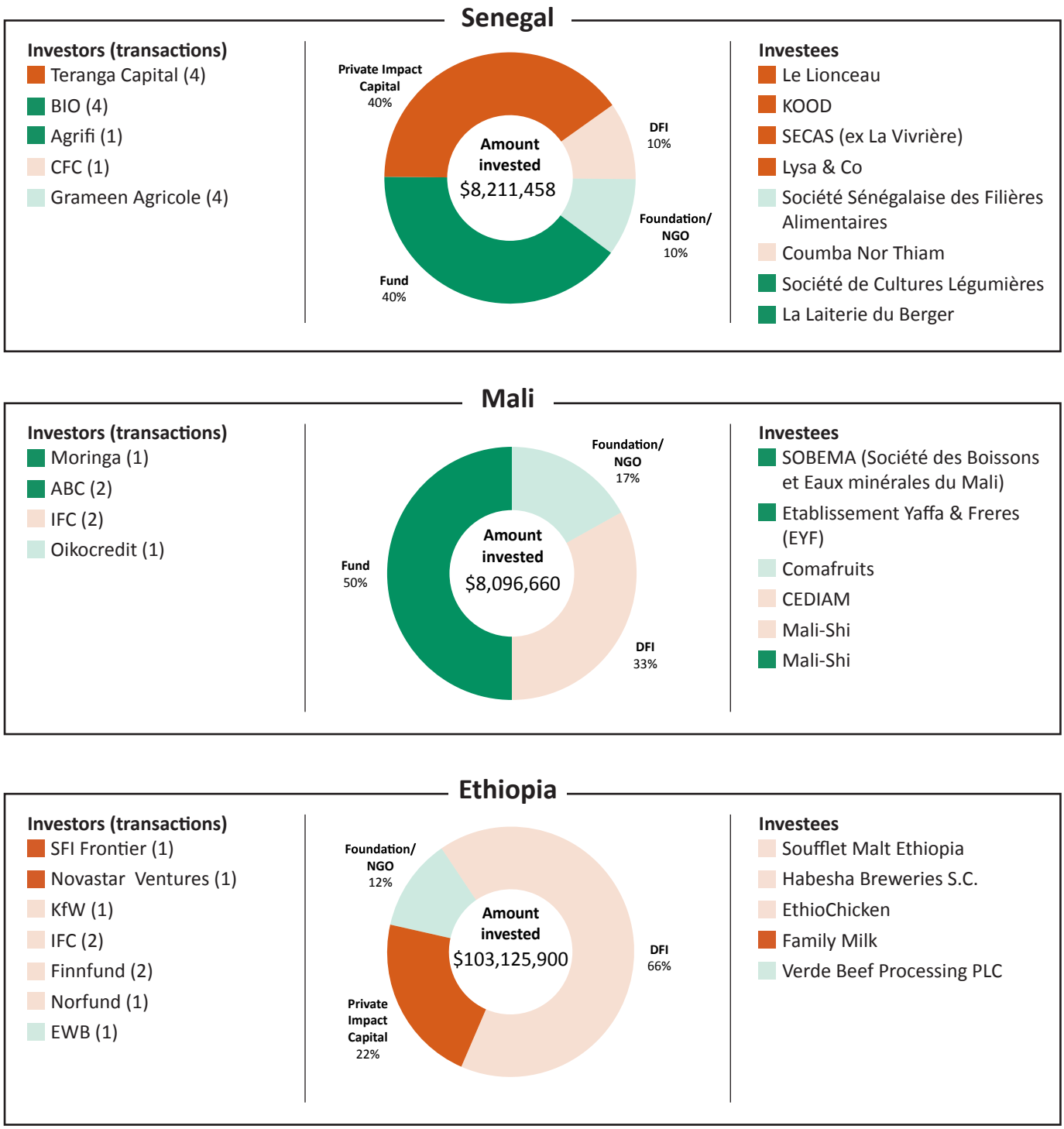

Figure 3 *Key actors*

Value chains attracting investments

Of the three agricultural sub-sectors, crops attracted the most investments compared to agroforestry and livestock. This was largely driven by investments in the barley value chain in Ethiopia, which attracted the largest investment in the country, totaling USD 77.6 million. These investments targeted Ethiopia's brewing industry and were aimed at boosting local barley sourcing from smallholder farmers. Excluding Ethiopia's barley investments, crops only attracted USD 15.7 million and falls below the livestock sector with capital deployed totaling about USD 23 million. Most of the livestock investment went to the poultry value chain in Ethiopia. In Mali, the mango value chain attracted the largest investments, mostly driven by the growing reputation of Mali's high-quality mangos in the export markets. Other investments in companies such as ComaFruits and SOBEMA were geared towards enhancing forward integration by facilitating the acquisition of state-of-the-art plants to process mangoes into purée. Figure 4 provides the amount of capital deployed within key value chains in Ethiopia, Mali and Senegal.

The only value chain with transactions occurring in more than one country was dairy, with three transactions in Senegal and one in Ethiopia. In Senegal, the dairy value chain led the way with transactions totaling USD 3.8 million. These investments, however, targeted one company, La Laiterie du Berger. The investments were made by BIO Invest and AgriFI and were aimed at enhancing the company's milk processing capacity and the supply chain by increasing the number and production capacity of dairy farmers supplying milk. The dairy industries in Ethiopia and Senegal are growing and evolving against a backdrop of rapid urbanization and increasing consumer demand for dairy products.

In the case of mangoes in Mali, the export market has been developed both in the sub-region and overseas. According to some of the impact investors interviewed, the competitive advantage of a value chain is a critical factor in its selection for investment, and in particular, its ability to compete either against imports or on the global market. Additionally, there appears to be a preference for the processing level of value chains as almost all investments across the four countries were at this level. This indicates a drive towards value addition but also an avoidance of production level risks.

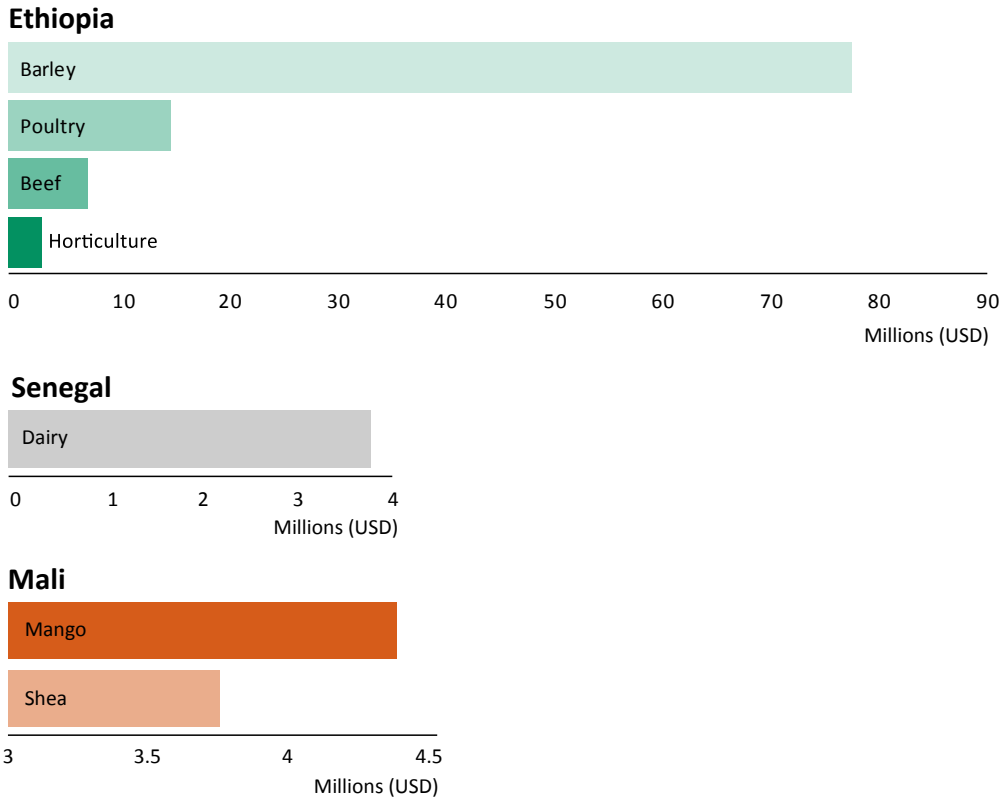

Figure 4 *Capital deployed to the different value chains in Ethiopia, Mali and Senegal*

Financing instruments utilized

We found that the two primary instruments utilized by impact investors when deploying capital in the four study countries were debt and equity. As illustrated in Figure 5, most impact investors surveyed preferred to use debt, 75% compared to equity at 25%. The equity deals with disclosed amounts were all transacted in Ethiopia. Senegal had four undisclosed equity deals while Mali had one undisclosed equity transaction.

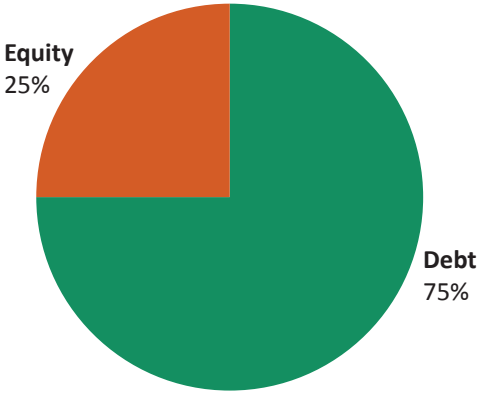

Figure 5 *Distribution of financing instruments deployed across the three countries*

A key factor for an investor in determining whether to take an equity stake when assessing a potential investment is the availability of exit options. A higher concentration of equity investments in Ethiopia and Senegal could signal better exit options for equity investors in the two countries compared to Mali. On the other hand, in Ethiopia, the focus on equity in lieu of debt could be a corollary of the difficulty accessing foreign exchange; currency risks could affect debt repayment. Therefore, this could be a risk mitigation measure. Figure 6 shows the distribution of financing instruments amongst the three countries.

Figure 6 *Distribution of financing instruments by number of transactions and transaction amount per country*

Investment sizes

As depicted in Figure 6, Ethiopia topped both Mali and Senegal in the total amount of impact capital deployed at USD 103.1 million and the average amount deployed per deal at USD 12.9 million. The strong preference for larger deals in Ethiopia can be explained by the level of development of its agricultural sector compared to the other two countries. Ethiopia's agricultural output in 2020 was valued at about USD 37 billion while that of Mali and Senegal was only USD six billion and USD four billion, respectively. This, coupled with the fact that Ethiopia also has a relatively large industrial sector depending on agricultural raw materials such as beer making, means that it can absorb larger investments compared to the others. In addition, the major investments in Ethiopia's brewery sector were government backed, enabling higher investment amounts to be deployed in comparison to the other countries.

In deploying capital to the countries, investors utilize various risk mitigating strategies. These include careful investigation of investee debt repayment capacity, organizational governance, use of foreign currency in investment transactions (US dollar or Euro), promotion of backward integration, and equity investments in fledgling companies to provide managerial input. More details are available in Appendix 1.

Investment impacts

Most of the investments were focused on key value chains that contribute in substantially to the livelihood of locals either in terms of consumption or revenue generation. This could also reflect investors choosing to invest in relatively well-developed value chains with strong linkages in order to mitigate risks.

In general, the expected impacts of the investments were largely economic in nature as detailed in Appendix 2, with an aim to increase income/productivity and to secure market access. As most of the investments were focused further downstream, that is, in processing or aggregation, direct producer related investments and impacts were limited to technical assistance and capacity building, for which little data was found. In terms of direct gender impact, investments in the women-dominated Mali shea value chain and woman-led Mali-Shi company were identified. It is unclear whether gender intentional strategies had been adopted in the other investment cases. Most of the investments appear to focus on enabling indirect benefits such as better integration to smallholders more broadly.

From a CSA perceptive, the investments satisfy the criteria of increasing productivity; however, more deliberate structuring is required to ensure that agricultural investments support the adaptation, resilience, and mitigation dimensions. This could be achieved by identifying key areas in prospective investment opportunities by which investors can contribute in part to these dimensions as part of the investment scheme.

Priority value chains for CSA investment

The study also identified priority value chains for CSA investments for each country. The goal of prioritizing these value chains was to identify those with potential for impact that presented opportunities for CSA investments that are contextually appropriate and align with the needs and interests of both investors and investees. This section presents an overview of these value chains, the recommended CSA investments, possible associated financing schemes, as well as the potential investment impacts.

Value chains were prioritized based on a set of criteria. These were: 1) the level of business-to-business relationships and partnerships within the value chain (from producers to end consumers); 2) trends in commodity production and consumption/demand; 3) level of other important inclusivity indicators in the value chain; 4) competitiveness of the value chain at the regional level (yields and pricing); and 5) potential for smallholder impact among others (See Table 1). These criteria represent key factors that make a value chain attractive to an investor with a focus on impact. The score ratings were based on the degree to which literature review findings and data available per value chain showed

KEY INVESTMENT INSIGHTS

- Public funds from development finance institutions play a key role in facilitating investments in developing economies.
- Currency risks are critical considerations for investors. Riskier projects may be more attractive in francophone countries due to the relative stability of the CFA Franc.
- Investor preference is for the processing level of value chains and for more integrated value chains where there is end-to-end oversight and control. The competitive advantage of a value chain is a critical factor in its selection, especially its ability to compete either against imports or on the global market.
- Debt instruments are more common; investors prefer equity instruments for growing enterprises to help govern the organization, but investees tend to avoid equity investments.
- Strategic use of grants and concessions through blended finance arrangements are critical to unlock support for capacity building as well as riskier elements like smallholder financing. This is also because some investments require multiple financing at various points of the value chain to be impactful.
- Due diligence costs are key barriers to investments, particular for small tickets. Investment opportunities in distant and poor infrastructure regions contribute further to these costs. Grants covering due diligence processes for low tickets with high growth potential should be explored. Partnerships with local investors needed to support due diligence activities.
- Deliberate investor commitment to go beyond productivity and identify potential gender, resilience, mitigation contributions in investment schemes is needed if CSA or gender relevant investments will be actively promoted.
- In countries like Sudan that lack impact investment track records, there is a need for bolstering investor confidence through DFI led investments, focusing on high prospect value chains for a start.

evidence or indications of positive impact or relevance for a given criteria. Table 3 shows the top three priority value chains with the most positive scores for each country (See Appendix 1 for more details on the process).

Table 2 *Priority value chains for each country*

Mali	Senegal	Ethiopia	Sudan
Livestock	Groundnuts/Vegetables	Coffee	Groundnut
Cotton	Rice	Barley	Wheat
Cereals	Cotton	Sorghum	Sesame

In each country, several investment opportunities were identified. Table 4 presents an overview of the key investment opportunities, the challenges within their value chains, potential impact in terms of CSA and gender, and the nature of the countries' investment environment. In Ethiopia, there is an opportunity to intensify commercialization of the sorghum value chain and provide short-term working capital loans for aggregation of barley. Also, there is a need to support development of silos and warehouses for sesame storage in Sudan, more so as women get better opportunities for income generation. Animal feed producers in Mali were also identified as they increase the quantities of raw materials; they source from smallholder feed crop farmers in out grower schemes, which have a great potential for investment. Investments in rice production and developing small and medium enterprises (SMEs) for mango processing were also identified in Senegal. Further details on investment opportunities and possible structuring are outlined in Appendix 1.

Table 3 Overview of investment opportunities

Country	Value Chain Investment Opportunity	CSA Impact	Gender Impact	Value Chain Problems	Investment Climate and Constraints
Ethiopia	**Sorghum** Blended finance towards more commercialization of sorghum value chain through: • Debt for aggregating cooperative • Grants for improved variety development • Input financing scheme	• Access to more resilient varieties • Increased yields and incomes • Better value chain integration	Women are major players in the transportation of sorghum. Targeted interventions would: • *Increase women participation in the value chain.*	• Production and productivity limitations due to biological and environmental circumstances (e.g., crop diseases) • Limited access to improved varieties • Poor soil fertility (soil acidity and poor soil nutrition)	• Investors in agriculture who produce for export at least 60 percent of the products or services, are entitled to an additional two years of income tax exemption • All foreign currency transactions must be approved by the National Bank for Ethiopia • Exporters have priority access to foreign exchange
	Barley Blended finance involving short-term working capital loans for aggregation of barley, equity/ debt for malt factory expansions	• Improved yields • Increased market access • Increased value addition • Reduced barley importation	Women rely on barley for feeding household and livestock. Access to improved varieties can contribute to higher yields per field resulting in: • *Enhanced nutrition benefits for family* • *Increased revenues*	• Limited access to improved varieties • Use of old cultivation techniques • Low levels of productivity	
Sudan	**Sesame** Blended finance to support development of silos and warehouses for storage through a combination of grant and debt, and grants for farmer capacity building	• Improved production and storage practices • Increased farmer incomes • Reduced post-harvest losses and waste	Women get better opportunities for income generation, through targeted support for capacity in order to participate in high value cash crops like sesame: • *Increased employment and revenues*	• Limited knowledge of stakeholders. For example, little knowledge in pesticide uses and unsustainable use of pesticides. • Limited awareness of Good Agricultural Practices • Unavailability of infrastructure for storage leading to high post-harvest losses.	• PPP law passed in 2021 organizes and promotes public private partnerships (PPPs), to encourage private entities to invest and participate in projects alongside public entities. • High political instability and uncertainty • Very high inflation rates above 300% per month

Country	Value Chain Investment Opportunity	CSA Impact	Gender Impact	Value Chain Problems	Investment Climate and Constraints
Mali	**Cotton** Blended finance for the provision of irrigation systems in partnership with irrigation supply companies on credit to cotton farmers through loan loss guarantees combined with a technical assistance grant facility	• Higher yields • Drought and erratic rainfall mitigation • Clean energy utilization	Cotton by-products provide income generation opportunities for women. For example, soap produced from cotton processing waste • *Increased women participation in the value chain*	• Challenges from climate change including shorter growing seasons, poor soil health. • High input costs and unstable cotton prices. • Contamination of freshwater resources when Irrigation facilities are not well managed.	• There is no discrimination between foreign-owned firms and Malian entities regarding investment opportunities. • The Malian investment code allows the foreign transfer and conversion of funds associated with investments, including profits. • Local currency exchanges are available at Malian banks • The government applies price controls to cotton, and occasionally to other commodities (such as rice) on a case-by-case basis. • Companies (domestic or foreign) that export at least 80 percent of their production are entitled to tax-free status • The CFA franc is pegged to the euro and supported by the French treasury, which ensures a fixed rate of exchange
	Livestock Debt instrument for short-term working capital in the form of a revolving facility to animal feed producers as they increase the quantities of raw materials, they source from smallholder feed crop farmers in out grower schemes	• Higher crop yields due to improved varieties leads to intensification • Improved market access for crop farmers • Manure use on smallholder farms	Women are involved in key processes for creating fodder feed for livestock. • *Increased employment and revenue* Women dominate livestock farming involving goat and sheep rearing • *Increased participation in value chain* Women targeted training would be impactful • *Access to inputs, information, capacity building*	• Transaction costs pose a challenge to cereal farmers to access stable markets • Large difference between the small, marketed volumes that farmers typically sell and the large demand of buyers, especially institutional buyers or industrial processors.	
	Rice Blended finance to support the adoption of SRI to enhance quality rice production and increase production volume through technical support, market linkages, and debt for expansion of rice processing facilities	• Improved climate resilience • Increased yield level • Upgraded rice value chain and linkages.	• *Increased participation of women in value chain* • *Increased economic power on the part of women*	• Lack of inputs for sustainable quality rice production. • Low yields and climatic sensitivity • Continued soil fertility depletion and water stress, especially in dry areas	

Country	Value Chain Investment Opportunity	CSA Impact	Gender Impact	Value Chain Problems	Investment Climate and Constraints
Senegal	**Groundnut and Vegetables** First loss guarantees for lending scheme providing solar powered pumps for irrigation to a cooperative in a four-way lending scheme involving a pump company, the cooperative, an off-taker and a financial institution	• Higher yields • Drought and erratic rainfall mitigation • Clean energy utilization	Vegetable value chains are dominated by men. Women are more involved in pack houses activities for vegetables. Targeted support schemes for women can lead to: • *Increased participation of women in the value chain*	• Reliance on traditional flood irrigation techniques and tremendous fluctuations in annual precipitation.	• High political stability with long history of peace • The CFA franc is pegged to the euro and supported by the French treasury, which ensures a fixed rate of exchange • The country is the second largest economy in Francophone West Africa behind Côte d'Ivoire • Very low inflation rates (1.9% in 2020) compared to countries in the region • Strong economic performance and GDP growth
	Mango Investments into developing processing small and medium enterprises (SMEs) for mango processing via private equity or venture capital	• Improved market access and reduction in fluctuation • Reduction in post-harvest loss and waste	Women play key roles in mango marketing and export packaging. Inclusive approaches in investment can have high impact on women. • *Increased employment and revenues*	• 65% of the produce estimated to be lost to post-harvest losses. • Low processing capacity of mangoes (approximately 10%).	
	Rice Private equity and senior debt to support rice production and processing capacity enhancement	• Improved yield quantity and quality • Reduced rice import • Reduce post-harvest loss and waste • Improve farming practices	Women significantly populate the rice production in Senegal. Although most women produce for subsistence purposes. • *Nutrition benefits for the family* • *Increased participation in value chain*	• Lack of access to extension services and inputs for sustainable quality rice production	

CONCLUSIONS

Introducing CSA in sub-Saharan Africa is an important pathway to adapt to the multiple threats posed by climate change, but implementation at scale will require substantial private sector investment to complement public investments. Based on an assessment of agricultural value chain investment experiences in four African countries (Senegal, Mali, Ethiopia, and Sudan), this study has documented impact investors' experiences and lessons learned. It has identified investments with high potential, the impact of the countries' investment environment, key challenges and opportunities, and preferences for financing schemes in each country.

The study documented several important investment patterns in the four countries studied. There is a clear preference for the processing level of value chains. This indicates both an emphasis on value addition and an avoidance of production level risks. Deal sizes were relatively small, except for the barley value chain in Ethiopia. This is a function of the size of the agricultural economy and the dynamism of the local beer industry. The competitive advantage of a value chain is a critical factor in its selection, especially its ability to compete either against imports or on the global market.

The study also identified investment opportunities aimed at enhancing the quality and level of production of crops. These include wheat in Sudan, sorghum and barley in Ethiopia, livestock in Mali, and groundnut, vegetables, and rice in Senegal. Debt accounted for 75% of the total investment identified; equity just 25%. This depends on the investment environment, for example exchange rate and currency conversion risks. The investment deals did not show a clear strategy towards gender inclusion. Integrating smallholder farmers into value chains appeared to be the main farmer benefits from the investments. In terms of CSA objectives, more deliberate structuring is required to ensure that agricultural investments support the adaptation, resilience, and mitigation dimensions as much as it does productivity.

The study identified several CSA impact investment opportunities, though there are also serious risks which need to be addressed for their successful implementation. Governments need to address bottlenecks such as slow bureaucratic procedures as well as help facilitate local programs that identify and link promising investment opportunities with investors. Working with reliable local partners will be critical for cost-effective due diligence for international investors. Impact investors need to seriously consider the introduction of more early stage and small ticket size investment packages that may be more appropriate for the SME-dominated agricultural sector in most African countries. At the same time, efforts to develop a pipeline of investable enterprises with potential CSA impact and a strong gender and social inclusion strategy will attract more investment in the sector. Development finance institutions can work with governments and the private sector to reduce risk and constraints through well-structured and targeted blended finance programs.

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APPENDIX 1: COUNTRY LEVEL ANALYSIS

Eight value chains were selected from each country for assessment – four cash crops and four food crops - except for Mali, where focus was on the priority value chains identified by the Climate Smart Agriculture Investment Plans (CSAIP). These were selected based on country data and literature leveraging the following criteria: (i) quantity of crop production and consumption/export in the country; (ii) number of smallholder farmers involved in the value chain; and (iii) an upward trend in the growth of the value chain over time. These value chains are listed below. The rest of this section presents an assessment of each country's context, existing impact investments, and an identification of priority value chains for investment opportunities.

Mali	Senegal	Ethiopia	Sudan
Rice	Groundnuts	Coffee	Groundnut
Watermelon	Rice	Teff	Wheat
Sorghum	Cotton	Barley	Sesame
Wheat	Millet	Sorghum	Pulses
Cotton	Onion	Wheat	Banana
Livestock	Potatoes	Sweet Potatoes	Millet
Millet	Maize	Banana	Sorghum
Mango	Sorghum	Maize	Onion

Ethiopia

Agriculture in Ethiopia

Despite witnessing a slight drop in the sector's contribution to the country's GDP from 41% in 2010 to 35% in 2020, agriculture is still a significant contributor to the country's overall economic development. In 2019, approximately 67% of the country's total labor force was employed in the sector, illustrating its influence on the livelihoods of most Ethiopians (World Bank, 2021a). About 95% of the country's total agricultural production can be attributed to approximately 12 million smallholder farmers who also account for 85% of all employment in the sector.

Credit to the agricultural sector has witnessed a 37% growth from USD 510 million in 2009 to USD 698 million in 2019 (FAOSTAT, 2021). The Ethiopian government, through its Growth and Transformation Plan (GTP II) for the period 2016-2020, prioritized the enhancement of agricultural production and commercialization to reduce the country's vulnerability to disasters such as drought and improve food security (EFCCC, 2020). In the years from 2004 to 2018, expenditure on food and agriculture by the Ethiopian government saw a 26% nominal growth rate, affirming government's support to the sector's growth (Pernechele et al., 2021).

Agricultural production in Ethiopia relies heavily on rain-fed systems, making the sector susceptible to climate change, especially irregular rainfall and adverse temperature changes (CIAT, 2017). This poses a challenge to the country's food security. Some of the opportunities for growth and investment in the sector include investment in mechanized farm equipment, post-harvest loss reduction systems, research-based food security systems, and natural resource management systems (CIAT and BFS/USAID, 2017). These investments are aimed at enhancing modern agricultural practices which could eventually contribute to Ethiopia's food and nutrition security as well as raising the quality and quantity of the country's agricultural exports.

Impact investment in Ethiopia's agricultural value chains

Ethiopia is considered an unexploited market by most impact investors, with many sizeable investment opportunities; however, an ossified bureaucracy and state control make it difficult to invest in the country. Investor funding per state regulations must be channeled through local banks; however, a withdrawal limit has also been placed on local banks, slowing cashflow in general.

Local banks also face liquidity issues; hence, they are unable to provide the much-needed capital for the agricultural sector. This has led to heavy reliance on supply chain financing, making advance payments or purchasing on credit. Events such as the ongoing conflict between the government and forces in the Northern Tigray region impair the country's ability to attract impact investors. The country ranked 102 out of 109 in the Global Foreign Direct Investment Country Attractiveness Index 2020. In the years from 2004 to 2013, impact capital worth USD 514 million was deployed, with USD 423 million coming from DFIs in 17 deals and the remainder from non-DFIs in 25 deals (GII Network and Advisors, 2015). In the same period, approximately 40% of all the deals done were in the agricultural sector (GII Network and Advisors, 2015) Table 1A provides an analysis of the surveyed deals from different types of investors in Ethiopia's agricultural sector using information available from 2016 to 2021.

The profiled deals illustrate a mix of preferences between debt and equity amongst impact investors in Ethiopia's agricultural sector. Though most of the deals were equity investments, the average capital invested per deal was relatively higher for debt investments at USD 24.3 million per deal compared to USD 6.1 million per deal for equity investments. The highest disclosed equity investment amount was less than half that of the highest debt investment at USD 22.2 million and USD 55.3 million, respectively. The barley value chain received the bulk of the investments (75% of the total amount disclosed), funded mostly by DFIs investing in breweries that source the commodity from

smallholder farmers. Six of the nine deals exclusively targeted the processing level of the value chains highlighted, while the other three focused on the aggregation level. Two of the largest deals (in Soufflet Malt Ethiopia and Habesha Breweries S.C.) involved an element of co-funding with two or more investors coming together to jointly invest in the targeted companies. In Soufflet Malt Ethiopia's case, both the International Finance Corporation (IFC) and the GAFSP Private Sector Window committed approximately USD 11.1 million to the deal in 2019.

***Table 1A** Impact investments in Ethiopia from 2016 to 2021*

Value Chain	Investee	Investor	Investment Instrument	Amount Invested	Value chain Level Targeted
Barley	Soufflet Malt Ethiopia	IFC and the GAFSP Private Sector Window in 2019	Equity	$ 22,240,400	Processing
	Habesha Breweries S.C.	IFC co-funded by FMO, Rabobank, ING Bank in 2019	Debt	$ 55,360,500	Processing
Poultry	EthioChicken	Finnfund in 2016	Debt	$ 10,000,000	Processing
	EthioChicken	Finnfund in 2021	Equity	$ 5,000,000	Processing
Dairy	Family Milk	SGI Frontier Capital	Equity	Undisclosed	Processing
Beef	Verde Beef Processing PLC (VBP)	Norfund in 2017	Debt	$ 7,400,000	Processing
Horticulture	Greenpath Food	Engineers Without Borders in 2017	Equity	$ 275,000	Aggregation
	Greenpath Food	Novastar Ventures & Oxfam's Enterprise Development Programme in 2018	Equity	$ 1,000,000	Aggregation
	Greenpath Food	KFW DEG in 2019	Equity	$ 1,850,000	Aggregation

Table 2A summarizes the enablers and barriers to investment in Ethiopian agricultural value chains.

***Table 2A** Investment climate in Ethiopia*

Enablers	Barriers
• Agriculture has been given priority, especially for export products such as coffee and oilseeds as well as the horticulture industry and is provided incentives such as tax holidays, favorable land lease terms and loans. • Although Ethiopia has strong state controls, a new national policy on forex allows investors to retain 30% of proceeds from export in forex account indefinitely. Also, foreign investments are allowed full repatriation of profits and payments for external loans in convertible currencies. • The Agricultural Transformation Agency, Ethiopian Investment Commission, and the Tigray Regional Government rolled out land acquisition process maps for the four regions that make up 85% of food processing investment projects by number to help facilitate responsible investments in land acquisition. • The enactment of the Investment Proclamation No.1180/2020 will increase the role of private sector investments in the country.	• Access to foreign currency is restricted and requires working with the Ethiopian Investment Authority. However, most investors may be hesitant in working with government with regards to disbursement of capital and repatriation. Structural shortages in foreign currency also means that there is often a significant wait period before investors can convert earnings into foreign currency. • Agri-businesses cannot access the same tax credits and similar incentives as business in the industrial parks. Investors often need these incentives, including access to local sources of capital, to invest. • Lack of clarity around the institutional processes required for investors as well as long waiting periods for investment registration. • Liquidity challenges of commercial banks hindering the timely disbursement of funds.

Priority value chains for impact investment in Ethiopia

The shortlisted value chains in Ethiopia are coffee, barley, and sorghum. Table 3A lists the eight value chains analyzed, and the criteria for selection of the shortlisted value chains.

Table 3A *Priority value chains selected in Ethiopia*

Criteria	Coffee	Banana	Maize	Wheat	Barley	Sorghum	Teff	Sweet Potatoes
Level of business-to-business relationships and partnerships within the value chain (from producers to end consumers)								
Level of private and public partnership (PPP) interventions in the value chain (includes targeted government and NGO intervention programs in the value chain)								
Trends in commodity production and consumption/ demand								
Level of market development including market access by key value chain actors								
Level of export (dollar and or euro) income generated per commodity								
Level of climate smart interventions within the value chain								
Level of other important inclusivity indicators in the value chain								
Competitiveness of the value chain at the regional level (yields and pricing)								
Potential for smallholder impact								
Trends in impact investors' participation in the value chain								
Level of access to finance by key actors in the value chain. (Access to finance enhances value chain productivity								
Priority Crop	**Yes**	No	No	No	**Yes**	**Yes**	No	No

High Medium-High Medium Low-Medium Low

Coffee

The coffee sector is well developed in Ethiopia, as the country is the largest exporter of coffee in Africa. In 2019, the crop earned about USD 731 million in export income, the highest of all its agricultural exports (FAOSTAT, 2021) Error! Bookmark not defined.. Smallholder coffee farmers, who are estimated to number over four million, are responsible for most of the coffee production in Ethiopia (Minten et al., 2015). But climate change is a growing threat to the future of Ethiopia's coffee industry. Higher temperatures in combination with less predictable rainfall increase the risk of pests and reduce flower bud formation. This has led to farmers expanding their coffee farming higher up the mountain slopes (DaMatta et al., 2019).

The potential impact of investments in sustainable coffee production is high and deserves particular attention because of its increasing popularity. For example, Ethiopia is the only country that produces natural forest Arabica coffee, providing scope for the sale of shade-grown coffee, through the Rainforest Alliance certification (Chemonics International Inc, 2010). Again, there is demonstrated interest in the sector by DFIs such as IFC, which has recently partnered with the country's NIB International Bank S.C. to help it increase lending to 70 coffee farmer cooperatives. IFC has extended a risk-sharing facility worth up to USD 10 million to NIB, which, through loans to the cooperatives, should help them increase the volume of coffee they process from about 460 to 4,000 metric tons, generating about USD 17 million in export revenues and creating 2,000 jobs, more than half of which will likely be filled by women (Chemonics International Inc, 2010).

Sorghum

Sorghum is a staple food crop widely cultivated in different agro-ecological zones, predominantly in dry areas where other crops can struggle to survive, and food insecurity is widespread. In 2019, the country produced close to 25 million tons of sorghum, most of which was utilized for human consumption (FAOSTAT, 2021). Approximately 95% of the sorghum is produced by smallholder farmers. It is a considered a strategic crop by the government for elevating the living standards of rural smallholder farmers (Maleaku, 2020). The value chain is well connected with a good flow of commodities and services between actors (Sertse and Disasa, 2014). Local traders are usually connected through brokers to more distant markets or urban centers. The intermediate role of brokers is particularly important to connect traders to marketplaces in the big cities. Brokers also intervene between traders, usually wholesalers in big market cities, and other actors such as processors and sometimes exporters.

Consumers have a direct link to retailers in big cities except in small towns, where they can also have a direct link to producers (farmers). As production is mainly for consumption, there is limited industrial use. The bulk of sorghum produced is consumed locally by farmers while smaller proportions are sold or reserved as seeds and animal feed (Orr et al., 2017). There has been no significant export in recent years.

The lack of a commercial market appears to be a constraint to farmers investing beyond a subsistence level of technology and production. Paradoxically, the lack of market surplus makes it difficult for the emergence of commercial markets for the commodity as most farmers produce for household consumption. Processors identify inconsistent supply as a major barrier to commercialization (Schipmann-Schwarze et al., 2015). The sorghum value chain would benefit from more supply to and demand from commercial outlets. Such a reorientation can be achieved through a variety of business models, including public-private partnerships (PPP) involving commercial farmers, manufacturers, processors, and traders, and will require critical support and investments at various levels of the value chain. The emerging agro-processing industries such as breweries, the potential for export, and the prospects of diversified uses of sorghum like forage and biofuel could contribute positively to this process. The sorghum value chain is rife with several CSA initiatives being implemented to enhance production and climate change adaptation such as the development of drought-tolerant sorghum varieties and improved farm management practices that consider GAP practices (Le Group-Conseil Baastel, 2022).

Barley

Ethiopia is one of the largest barley producing countries in Africa, second only to Morocco; it produces about 25% of the total barley production in Africa. In 2019, the country produced approximately 10 million tons of the commodity, representing a 3.7% continuous annual growth rate from the figures reported in 2015 (FAOSTAT, 2021). The crop is predominantly cultivated by smallholder farmers; in the 2013/14 growing season, close to 4.5 million smallholder farmers grew barley on more than one million hectares of land (Rashid et al., 2019).

Barley yields per hectare in Ethiopia are still considerably low and varied, which represents an opportunity for CSA-targeted investments. Most farmers have yet to completely embrace modern inputs like fertilizer and newer drought resistant seeds varieties (Schipmann-Schwarze et al., 2015). Depending on its use, generally, the barley value chain may consist of two distinct value chains involving different actors along the chains. These are the malt barley and food barley value chains, which provide different opportunities and benefits for each actor.

Around 80% of food barley is consumed by farm households, with the balance sold for income or retained for planting; 70-80% of the malting barley produced is sold, with the balance for home consumption and seed. Malting barley is predominantly grown as a cash crop, so market access is very important. Brewing is dominated by two malters and six brewers. Together, the six brewers have an annual production capacity of 11.7 million hectolitres. Total derived malt demand is around 136,000 metric tons per year, which means existing malting capacity is only able to meet 35% of current demand (UKAid, 2018). For both value chains, there is a need to enhance access to improved seed, create linkages, and strengthen and expand contract farming for barley production (Rashid et al., 2019). Private investment in storage should also be encouraged and bolstered by appropriate and transparent rules and regulations.

Potential investment opportunities and models

The following tables focus on three promising value chain investment opportunities and summarize the challenges that must be overcome.

Enhancing value addition of traceable, sustainably sourced coffee for export Market	
Value Chain: Coffee 	**Vehicle: Debt/Equity** • Instruments: Long-term and short-term/Quasi-equity combined with technical assistance grants • Value: Debt/Equity – USD 1m to 5m and technical assistance grant – USD 100k to 300k
Problem: *Ethiopia is the largest producer of coffee in Sub-Saharan Africa, but most of the coffee produced is exported without much value addition.* Roasted coffee is mainly confined to the local market. These local roasting companies lack the financial capacity to compete with international coffee roasters in developed markets. The opportunity cost resulting from exporting only green coffee beans is high for both the country and the smallholder coffee farmers who depend on the crop to earn a living.	
Opportunity: *For potential investors, there is an opportunity to partner with ambitious local coffee roasters such as Aster Bunna, who seek to enhance their processing, packaging, logistical, marketing, and branding capacities to become more competitive in the international roasted coffee market.* The key selling point for such companies is the supply of high-quality traceable coffee, sourced directly from farmers whom they support by strengthening climate smart agro-economic practices, thus ensuring the sustainable production of the cash crop. Such investments would require capital for three main purposes: (i) long-term investments for capital expenditures; (ii) short-term working capital for the direct sourcing of coffee beans from farmers; and (iii) non-refundable capital/grants in the form of technical assistance for capacity development of the farmers from whom the crop is sourced.	

Enhancing access to improved varieties

Value Chain: Sorghum

Vehicle: Blended finance

- Instruments: Debt (long-term and short term) combined with technical assistance grants
- Value: Debt (long-term and short term) – USD 1m to 10m and technical assistance grants – USD 100k to 300k

Problem:

Despite its huge economic benefits to Ethiopia, sorghum production and productivity are limited by a variety of biological and environmental reasons, such as crop diseases, limited farmer access to improved varieties, low farmer adoption of better varieties, and poor soil fertility. There is a need to scale access to improved sorghum varieties and other technologies across the country to help improve sorghum production. Sorghum production is dominated by smallholders who often lack the willingness or resources for purchasing improved sorghum seed varieties or are poorly informed about the likely benefits of these varieties. This is driven by the under-commercialization of the value chain. Improving the market options for smallholder farmers would provide an incentive for adopting improved varieties.

Opportunity:

Value chain financing schemes could present an interesting opportunity to farmers. Ethiopia's proximity to the Middle East presents an opportunity to build export markets for sorghum. Building cooperatives-aggregator-exporter relationships would provide a route for developing a more commercial sorghum market. This will require technical assistance for commodity export companies on meeting the standards and regulatory requirements of the Middle Eastern or other attractive markets.

Concessional loans for day-to-day operational expenses for these companies to purchase sorghum from aggregators linked to cooperatives will be required to stimulate demand. At the aggregator level, investments to cover sorghum cleaning machinery, transport vehicles, and storage facilities are critical interventions and opportunities.

Grant funds would be needed to support selected cooperatives to acquire currently available improved seed varieties as well as to support further seed research and development. Seeds would be provided gratuitously to farmers to enable confidence building in the improved varieties with an agreement for guaranteed purchase at the end of season. This option would provide the farmer both the assurance of a market as well as seeds on credit. Adopter farmers can help demonstrate the performance of improved varieties in an everyday context as well as the benefits of a guaranteed market, and thereby attract more farmers into the scheme.

Linking existing agro processors with impact investors ready to support such schemes through technical assistance would provide a means for farmer adoption of improved varieties. This scheme must be complemented with training and capacity building to inform farmers on farm management and the best practices to adopt to maximize output.

Enhancing Access to Improved Varieties

Value Chain: Barley

Vehicle: Blended finance

- Instruments: Revolving loan facility combined with grants for technical assistance
- Value: Revolving loan facility – USD 0.5m to 5m and technical assistance grant – USD 100k to 300k

Problem:

The predominance of local barley varieties and the prevailing cultivation techniques in Ethiopia have meant that local barley yields (at around 1.5 metric ton/hectare) are significantly lower than what is possible on farms using improved inputs, including improved seeds and modern farming techniques. Finding ways to stimulate farmer uptake of improved seed varieties would improve the performance of the value chain. Such improvements will in turn put pressure on the working capital capacities of the off-taking cooperatives.

Opportunity:

Ethiopia's brewing industry is a fast growing and important contributor to economic growth, but the sector imports as much as 90% of its malt barley needs. Programs that support local sourcing of barley for the industry would be significant in facilitating farmer uptake of improved varieties. Impact investor collaboration with breweries can help to establish and scale up out-grower and contracting schemes for barley. Farmers participating in out-grower schemes would be supplied with improved varieties on credit by the breweries, to be paid back in kind with barley at harvest. A good example of this is the Heineken barley varieties, Traveler and Grace, which are reported to have made improvements in the yield of malt barley from their contracted farmers, from around 3.5 mt/ha to over 6.5 mt/ha.

At present, many barley smallholders belong to co-operatives, which have a dual role, i.e., to supply inputs to their members and to buy malting barley (and other crops). Private traders operate in growing areas and buy from smallholders who are not members of cooperatives, as well as from those who are members but prefer to sell to traders. Cooperatives, as intermediary entities, receive a commission from 10-40% for aggregating, but must wait for payment, which means their cash resources become stretched.

There are several opportunities for investors. They can support cooperatives supplying partner breweries/malting factories with short-term working capital to help bridge these financing gaps (UKAid, 2018). Equity/debt investments in existing malting factories could support expansion of processing capacities and increase the supply of malt to breweries. Grant funds can help complement and de-risk this strategy through enabling the development of improved agricultural inputs such as seeds and fertilizers and to build the agronomic and technical capacity of Ethiopian smallholder barley producers.

Sudan

Agriculture in Sudan

Despite being considered an important component of Sudan's economy, the country's agricultural sector has experienced a continuous decline in its influence on the country's GDP over the years. In 2020, the sector contributed approximately 21% to GDP, a 13% decline from the 2010 figure of approximately 34% (O'Neil, 2021). This can be attributed to declining investments in agriculture, implementation of privatization policies, and the expanding services sector which has drawn many laborers away from agriculture. In 2020, approximately 40% of the country's total labor force was employed in the sector, a 7% decline from the figure reported in 2010 (Trading Economics, 2021). Agriculture is generally exempted from taxation; however, there are various fees such as crop market fees and transport fees which effectively are taxes.

The country's agricultural sector can be classified into three main categories: the irrigated sector, the rain-fed mechanized and traditional rain-fed sector, and the livestock sector (ITA, 2021). Out of the 20 million ha of land under cultivation, about two million ha are irrigated, with government projects dominating, while approximately six million ha are under rain-fed mechanized systems (Rashid et al., 2019).

The country is currently experiencing adverse climatic conditions resulting from declining rainfall by approximately 0.5% annually, frequent temperature changes, and intense drought incidences (Dafalla, 2019). This in turn has reduced crop and livestock production, posing a major risk to the country's food security. As rain-fed traditional farming systems are the most widely practiced in the country, there is an opportunity for investments geared towards enhancing mechanized farming systems, especially along the Nile River and its tributaries. This will go a long way in enhancing the adaptability of many of the country's smallholders to climate change.

Impact investment in Sudan's agriculture value chains

Like Ethiopia, many investors consider Sudan an untapped market. Compared to most countries in Africa, Sudan's financial sector is underdeveloped, with most banks (the main suppliers of capital) being small, with low risk appetites and capital levels. This provides an opportunity for impact investors to fill the funding gap and help develop the country's financial sector by supporting its financial institutions. Sudan's political instability, however, is a major concern for most potential investors, as it casts doubt on the security of their investments. In the 2020 Political Stability Index, Sudan was ranked 48 amongst 53 African countries analyzed. Incidences such as the recent coup d'état attempt in September 2021 against the Sovereignty Council of Sudan serves to discourage many investors from deploying their capital in the country. In such situations, investors may need to protect their investments by utilizing risk mitigation tools such as political risk insurance. Such tools, however, may be difficult to obtain or be very expensive.

There is currently no record of impact funds disbursing capital in Sudan. However, between 2004 and 2013, USD 61 million worth of capital was deployed to sugar processing projects by one DFI in three deals (Network and Advisors, 2015). There is no official central bank interest rate to ensure compatibility of financial practices with Islamic principles. Nevertheless, the Murabaha Profits Margin Rate controlled by the Central Bank of Sudan is widely used by Sudanese banks (Trading Economics, 2022). Interest rates have seen an upward trend in the past five years, reaching 22.8% in 2020 (African Economic Outlook, 2022). Inflation has been high across various years, escalating to an estimated 124.9% in 2020, compared with 82.4% in 2019 and remaining high in 2021 at over 300%.

According to key informants in Sudan, crops like sesame, wheat, and groundnuts are deemed to be strategic by the government and price controls are usually in place, on occasion along with subsidies. These conditions make Sudan a challenging prospect for private investors, compounded by the country's political situation. However, the Sudanese government effort to obtain debt relief under the Heavily Indebted Poor Countries (HIPC) initiative is a step in the right direction. This could lead to improved economic conditions (World Bank, 2021b). Table 4A summarizes key characteristics of the investment climate.

Table 4A *Investment climate in Sudan*

Enablers	Barriers
• The United States lifted its sanctions on Sudan in 2017, enabling international institutions to offer services. In 2020, the country was also removed from the United States list of states associated with terrorism. • The State has developed several sectoral policies to support agriculture, among them are the food and agriculture framework 2006 and the Agriculture Policy Framework (2012-2017) which has prioritized gender involvement in agriculture and land policies to improve access to land.	• Sudan has in the past faced a lot of political instability. Its political index average for the period 1996-2020 was -2.17 points (-2.5 is weak, 2.5 strong). Its 2020 value stood at -1.76 points whereas the world's average was at -0.07 points for the same period. The country in 2021 experienced another coup d'état and is unstable governance-wise. • The financial system in Sudan is relatively small, compared to others in the region. Due to Sudan having been under comprehensive U.S. economic and financial sanctions, it had not had access to international banking institutions until late 2017 when the sanctions were lifted. However, not many international banks can be found in Sudan despite lifting of the sanctions. • Limited human resources, especially in the formal sectors, as most learned people leave the country to look for jobs elsewhere due to ongoing crisis. A key element in investor due diligence processes is an assessment of management capacity levels of the prospective investee. As these capacities decline the more challenging it is to attract investment. • Sudan ranked 173 of 180 on the Transparency International's 2019 Corruptions Perception Index. Perceived high levels of corruption significantly impedes investor interest.

Priority value chains for impact investment in Sudan

The shortlisted value chains in Sudan are sesame, groundnuts, and wheat (see Table 5A).

Table 5A *Priority value chains selected in Sudan*

Criteria	Banana	Groundnuts	Millet	Onions	Sesame	Wheat	Pulses	Sorghum
Level of business-to-business relationships and partnerships within the value chain (from producers to end consumers)								
Level of private and public partnership (PPP) interventions in the value chain (includes targeted government and NGO intervention programs in the value chain)								
Trends in commodity production and consumption/ demand								
Level of market development including market access by key value chain actors								
Level of export (dollar and or euro) income generated per commodity								
Level of climate smart interventions within the value chain								
Level of other important inclusivity indicators in the value chain								
Competitiveness of the value chain at the regional level (yields and pricing)								
Potential for smallholder impact								
Trends in impact investors' participation in the value chain								
Level of access to finance by key actors in the value chain. (Access to finance enhances value chain productivity								
Priority Crop	No	**Yes**	No	No	**Yes**	**Yes**	No	No

High Medium-High Medium Low-Medium Low

Sesame

Sesame seed is one of the most important agricultural export commodities in Sudan. In 2020, Sudan was ranked as the largest producer of the crop, producing approximately 1.5 million tons, more than double that of its closest competitor, Myanmar, which produced 740,000 tons (FAOSTAT, 2021). In the same year, the crop earned the country USD 616 million in export revenue, contributing about 2.4% of the country's GDP (FAOSAT, 2021). Approximately 38% of sesame production in Sudan is driven by traditional rain-fed smallholder farming, and there is only partial adoption of new higher performance varieties. This offers an opportunity for investment in more modern CSA production techniques (Ibrahim et al., 2020). The sesame seeds produced in Sudan are classified into two types, based on physical appearance: white sesame seeds and red sesame seeds. The higher-quality white sesame seeds have 40–46% oil content, are considered more refined, and are used for direct consumption. Sesame products are mainly the broken seeds or sesame oil.

According to UNIDO (2017), there is generally a lack of quality seeds and farmers' agricultural practices are poor. Most farmers still use traditional seed varieties, resulting in low productivity. Smallholder farmers have limited opportunities to access improved seeds, fertilizers, and pesticides, and the rain-fed agriculture regions are significantly underserved in terms of presence of input providers. The situation in the irrigated sector is better, as private suppliers provide the required inputs to some extent. Horizontal linkages of farmers are limited - farmer cooperatives or associations are not widespread in many regions in Sudan, limiting the dissemination of market information and promotion of non-organic fertilizer and chemical pesticides.

After production, collectors accumulate sesame-seed directly from farmers and they are normally paid in cash. The primary collectors sell to processors, exporters, regional traders, or sell directly in local markets for domestic consumption. After sesame-seed is collected from farmers, it is transported to regional markets located in the center of each State. A significant proportion of the crop is auctioned in several auction centers. Purchases are made by commodity traders with well-established businesses and the capacity to handle large volumes of sesame seed. Normally, auction facilitators receive investments from commercial banks or local government in storage and transport facilities. Agriculture financial services are generally focused on irrigated and mechanized rain-fed areas, with very limited presence in the traditional rain-fed areas where sesame seeds among many other crops are produced in large quantities. Smallholder producers, for the most part, are without access to formal credit and rely on local money lenders and village traders with high interest rates.

Groundnuts

Sudan is one of the top producers of groundnuts worldwide, ranking 5th in 2020 with production quantities of approximately 2.8 million tons (FAOSTAT, 2021). The crop is also considered a major export earner as shelled groundnuts earned the country export income worth USD 272 million in the same year (FAOSTAT, 2021). Seventy percent of Sudan's groundnut production is driven by traditional smallholder farmers located in the country's western states (Siewert, 2020). The main actors in the value chain are farmers, raw groundnut traders, peeler service providers, peeled groundnut traders, processors, oil wholesalers, oil retailers and finally consumers.

The potential for CSA in this value chain is high, especially in the drought prone states where more drought resistant groundnut varieties and mechanized irrigation systems can be introduced to enhance smallholder farmers' adaptability to climate change. Farmers face knowledge barriers as many do not know the correct moisture content required for the safe storage of groundnuts, which can potentially lead to aflatoxin contamination. In terms of value chain development, the Sudanese government is keen on processing nuts in-country to increase product value. This led to a ban on export of raw peanuts in 2020. Government's interest in the value chain provides an opportunity for private and public initiatives and investments.

Wheat

Wheat is considered one of the most important commodities in Sudan, especially for food security. Its demand, especially in the cities, is greater than the amount produced, leading to huge imports. In 2019, domestic production only provided about a quarter of the consumption needs of Sudan's cities (Thomas and Gizouli, 2020). About 85% of Sudan's wheat supply has come from imports over the last decade, costing the country about USD 500 million a year (World Bank, 2020).

The wheat value chain involves several actors, including farmers (producer associations and cooperatives), wheat producing schemes such as the Gezira Scheme, seed producers, input suppliers, microfinance, the Agricultural Bank of Sudan (ABS), the agroindustry (flour millers), and the Ministry of Agriculture and Natural Resources, who all have a significant and integrated role in the wheat sector. The government subsidizes more than 2.5 million metric tons of wheat imports annually. ABS plays a key role in enhancing financial inclusion in this value chain by providing credit in-kind to farmers for the major inputs (seeds, fertilizers, pesticides, and equipment) and credit in cash for services such as harvesting. The Bank implements wheat sector official pricing policies. ABS buys the grain and deducts the credit from the payment (ICARDA, 2020). The Government annually allocates and prioritizes agricultural finance for priority crops like wheat, cotton, and sorghum (World bank, 2020).

The value chain provides ample opportunities for investment to enhance domestic production in the face of harsh weather patterns resulting from climate change. Such initiatives include improving irrigation farming, especially by smallholder producers, improving aggregation, storage and transportation by cooperatives and producer associations, and facilitation of credit to key value chain actors by commercial banks and rural microfinance institutions (Opaluwah, 2021). To enhance the value chain's adaptability to climate change, new heat tolerant wheat varieties have been introduced for commercial cultivation under the SARD-SC project (Trading Economics, 2021). About 30% of the food (wheat) is produced by women, who account for 49% of farmers in the irrigated sector and 57% in the traditional sector. Women farmers are particularly marginalized due to their limited access to land, inputs, extension advice, and technologies; impact investments can look to improve this within the value chain (World Bank, 2020).

The following table focuses on the most promising value chain investment opportunity at present and summarizes the challenges that must be overcome.

Potential investment opportunities and models

Capacity building and Storage Facilities for Value Chain Actors	
Value Chain: Sesame	**Vehicle: Blended finance** • Instruments: Debt combined with technical assistance grants • Value: Debt – USD 0.5m to 2.5m and technical assistance grant – USD 50k to 150k

Problem:

A key area of improvement for sesame production is the knowledge of stakeholders. Farmers have limited pesticide knowledge, and unsuitable use of pesticides lowers the quality of sesame seeds. There is also limited awareness of good agricultural practices, i.e., efficient crop management methods, pest control measures, and pre- and post-harvesting practices. Most farmers lack the proper infrastructure for storage, leading to high rates of post-harvest losses. The harvested sesame seeds are stored on the ground which causes contamination with sand and other impurities.

Opportunity:

As Sudan is already deemed to produce good quality sesame seeds, key investments in these areas of weakness would contribute significantly to improve the country's positioning in the global market. Currently, the export destinations are limited to countries in the region (Saudi Arabia, Egypt, Syria, Lebanon, and Jordan) and China. Sudan has difficulties in accessing high-end markets such as Japan, Korea, and EU. This market opportunity loss is caused by the lack of compliance to sanitary and phytosanitary measures, in particular relating to pests, microbiological contamination, mycotoxins-producing fungi and non-compliant pesticide residues in the final product. (UNIDO, 2017)

Technical assistance to support extension services provision to farmers organized in cooperatives or connected to off-takers would be an importance mechanism for impact investors to improve this situation. Training on post-harvest management and practices would contribute to lower losses and higher returns to farmers. Private silos and warehouses for storage of harvests can also be developed through long-term loan facilities to processors in the value chain. This will increase Sudan's ability to supply safe and high-quality sesame seeds to various export markets. As the country is generally high risk, guarantees will be needed to encourage investments that medium to long term.

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Mali

Agriculture in Mali

Agriculture is the most important economic sector in Mali, contributing to approximately 36.1% of the country's GDP in 2020 (O'Neil, 2021). In the same year, close to 62% of the country's labor force was employed in the sector, further illustrating its importance (World Bank, 2021a). The country's landlocked geography and creeping desertification, which has led to soaring temperatures and reduced rainfall, has rendered it a climate-sensitive economy. This makes Mali one of the most vulnerable countries to sudden shifts in climatic conditions. Rising temperatures, particularly in the southwest, center, and northern regions, as well as fluctuations in water availability, threaten the pastoralist and agrarian livelihoods that support most of the population. Despite this, the sector still presents ample opportunity to those engaged in it. Such opportunities include mechanization of the sector, processing of meat and cereals for sale both locally and internationally, marketing of irrigation tools to increase agricultural output, and the production and supply of animal feeds to serve its burgeoning livestock sector.

Impact investment in Mali's agriculture value chains

Interest in Mali is growing amongst impact investors, though it has yet to reach the levels observed in some of its West African counterparts, such as the Ivory Coast, Nigeria and Ghana, which are much more developed economies. The country's political instability as evidenced by the coup d'état in 2020 (and others since then) deters many impact investors from deploying their capital in the country. Mali came in third last out of 53 African countries in the 2020 Political Stability Index. This, coupled with the informality of the value chains, serves as a deterrent for investors. On the other hand, Mali's currency, the CFA Franc, is pegged to the Euro, which serves as a hedge against currency risk for foreign investments. This also means that local investees do not face the difficulty and additional costs posed by depreciating currency rates when repaying foreign debt investments. The CFA's fixed exchange rate to the Euro therefore supports a greater facilitation of trade and investment through the reduction of uncertainty and stabilization of domestic prices. Mali's membership of the West African Economic and Monetary Union (WAEMU) and the Banking system supervision exercised by the independent Central African Banking Commission contribute to maintaining financial stability.

In the period between 2005 and 2015, Mali benefited from investments worth approximately USD 123 million in 32 deals (GIIN and Dalberg Advisors, 2015). DFIs deployed USD 113 million in 20 direct investment deals, while non-DFIs deployed USD 10 million in 12 direct investment deals (Thomas and Gizouli, 2020). Table 6A provides details on the surveyed impact investment deals in Mali's agricultural sector between 2016 and 2021 for which information was available.

Table 6A *Impact investments in Mali from 2016 to 2021*

Value Chain	Investee	Investor	Investment Instrument	Amount	Value Chain Level Targeted
Mango	SOBEMA (Société des Boissons et Eaux minérales du Mali)	Moringa Fund in 2018	Equity	Undisclosed	Processing
	Etablissement Yaffa & Freres (EYF)	ABC Fund in 2021	Debt	$ 283,100	Aggregation & processing
	Comafruits	Oikocredit in 2021	Debt	$ 1,811,840	Processing
	CEDIAM	IFC in 2021	Debt	$ 2,264,800	Processing
Shea	Mali-Shi	IFC in 2019	Debt	$ 2,831,000	Processing
	Mali-Shi	ABC Fund	Debt	$ 905,920	Aggregation & processing

Based on the deals presented above, there is a clear preference for debt amongst investors compared to equity. This can be explained by the fact that there are not many exit options for equity investors, as the private and public equity markets in Francophone West Africa remain underdeveloped. It has also been observed that financial literacy among company owners is rather low. Therefore, company owners do not prefer equity investment.

The most prominent value chain amongst investors was the mango value chain, attracting 54% of the capital disclosed in five of the six deals analyzed. Growing demand for Malian mangoes in Europe is the major driving force behind the growth and investments in this value chain. Most of the investments targeted the processing level in the value chains analyzed and were geared towards improving processing operations for better market access, particularly in the international market. Table 7A summarizes key characteristics of the investment climate.

Table 7A *Investment climate in Mali*

Enablers	Barriers
• Mali is a member of WAEMU, which offers a shared framework for competitive market development, and a streamlined and harmonized legal environment between WAEMU countries. This contributes to the country's financial stability and ease of business for investors. • Special incentives and policies have been established by the government, such as the Agricultural Development Policy for 2011–2020, which promotes the economic advancement of women and youth. There is a dedicated office set up to guide investors in the Malian environment. The revised Agricultural Land Law (2017) also requires that 15% of irrigated land be allocated to women and youth; this creates more opportunities for inclusive investing. • Mali's currency, the CFA, is pegged to the Euro which serves as a hedge against currency risk for foreign investments. This also means that local investees do not face the difficulty and additional costs posed by depreciating currency rates when repaying foreign debt investments.	• Recurring political crises and security threats make Mali less attractive for investments. Continued instability in northern and central Mali and the minimal presence of the Malian security forces in many areas have permitted terrorist groups to conduct attacks against Western targets and Malian security forces. • The general poor infrastructure in many parts of the country also severely limits agricultural market potential and has cost implications for due diligence evaluations, making investment in the country less attractive to potential investors. • Relatively small investment ticket sizes that the investment opportunities present makes costs of due diligence and trust building between investor and prospects high and limit the profitability of the investment venture.

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Priority value chains for impact investment in Mali

The shortlisted value chains in Mali are cotton, cereals, and livestock (see Table 8A).

Table 8A *Priority value chains selected in Mali*

Criteria	Rice	Watermelon	Sorghum	Wheat	Cotton	Livestock	Millet	Mango
Level of business-to-business relationships and partnerships within the value chain (from producers to end consumers)	High	Medium	High	Medium	High	High	High	Medium
Level of private and public partnership (PPP) interventions in the value chain (includes targeted government and NGO intervention programs in the value chain)	High	Low-Medium	High	Medium	High	High	High	Medium
Trends in commodity production and consumption/ demand	High	Medium	High	Low	High	Medium	High	High
Level of market development including market access by key value chain actors	High	Medium	High	Medium	High	High	Medium	Medium
Level of export (dollar and or euro) income generated per commodity	Low	Low-Medium	Low	Low	Low	Medium	Medium	High
Level of climate smart interventions within the value chain	High	Low-Medium	High	Medium	High	High	High	Medium
Level of other important inclusivity indicators in the value chain	Low	Medium	Low	Medium	Medium	Medium	Low	High
Competitiveness of the value chain at the regional level (yields and pricing)	High	Low-Medium	High	Low-Medium	Medium	High	Medium	Medium
Potential for smallholder impact	Medium	Medium	Low	Medium	High	High	Medium	Low
Trends in impact investors' participation in the value chain	Low	Low-Medium	Low	Low	Low	Low	Low	High
Level of access to finance by key actors in the value chain. (Access to finance enhances value chain productivity	Medium-High	Low-Medium	Medium	Low-Medium	Medium-High	Low-Medium	Medium	Low-Medium
Priority Value Chain	**Yes**	No	No	No	**Yes**	**Yes**	No	No

High Medium-High Medium Low-Medium Low

Cotton

Cotton is produced across the Sudano-Sahelian, Sudanian, and Guinean climatic zones by close to 3.5 million farmers, most of whom are smallholders. In 2018, the country led the continent in the production of cotton lint with 276,000 tons and was third in the production of cotton seed continentally in the same year with 348,000 tons (FAOSTAT, 2021). In 2019, cotton lint earned the country approximately USD 93 million in export revenue, second only to livestock (FAOSTAT, 2021). All farmers sell their cotton to the state-owned company, Compagnie Malienne pour le Development du Textile (CMDT), which links producers to the market through input subsidies, ginning, marketing, and facilitating export of the cotton. Cotton producers are usually contracted by their regional cotton processing plants through which they receive credit in kind (inputs) disbursed through farmer unions (Jessop et al., 2012). The regional processing plants receive funding from financial institutions who partner with them to avail funding to other value chain actors below them (World Bank, 2020). Cotton farmers get state subsidies on the condition that they also cultivate crops like corn and millet.

Livestock

Livestock farming is a major contributor to Mali's agricultural sector, accounting for approximately 30% of the sector's GDP. In the years from 2000 to 2016, approximately 70.9 TLU (tropical livestock units) were held per 100 people in Mali, a figure that is over triple the median figure for the rest of the continent (23.44) (Kuo, 2020). In 2019, live cattle earned the country approximately USD 97 million in export income, the highest of any of Mali's agricultural commodities (FAOSTAT, 2021). Most livestock keeping is done by smallholders, who mostly rear goats, sheep, and cattle (FAO, 2017). The dairy value chain lags the meat industry; however, the government's Project for the Development and Valorization of Dairy Production in Mali (PRODEVALAIT) is providing support for the growth of the sector, constructing milk collection centers and distribution of milk processing equipment. In 2020, Swiss

Development Cooperation contributed a little over USD 700,000 to the budget allocated for PRODEVALAIT. This value chain is less sensitive to climate change than some others. CSA interventions such as crop-livestock integration could serve to expand production, thus enhancing the country's food security (World Bank, 2019).

Rice

Rice is one of the most widely cultivated food crops in Mali; nevertheless, it is also the most widely imported crop. Rice production in 2019 was approximately 2.1 million tons, second only to maize, with imports adding a further 263,000 ton (Goedde et al., 2019). Most of the rice grown is done by smallholder farmers who cultivate the crop on less than 1.8 hectares (MoFA, 2009). The value chain's potential for CSA investments is high, with earmarked projects such as the enhancement of rice intensification systems amongst producers to reduce their sensitivity to climate change while increasing productivity (Najjar et al., 2016). Funding to the sector has been availed by development and commercial banks, but mainly to off-takers and processors. Rice producers are increasingly being served by microfinance institutions (UNIDO, 2017).

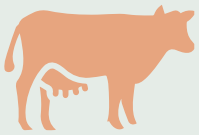
Potential investment opportunities and models

The following tables focus on three promising value chain investment opportunities and summarize the challenges that must be overcome.

Integrated Water Management	
Value chain: Cotton 	**Vehicle: Blended finance** • Instruments: Loan loss guarantee combined with a technical assistance grant facility • Value: Loan guarantee – USD 0.5m to 1.5m and technical assistance grant – USD 50k to 100k
Problem: *Cotton farmers in Mali face climate challenges, with shorter growing seasons, poor soil health, high input costs and unstable cotton prices.* Farmers rely on rain to grow their crops, so extreme weather in the form of late and erratic rainfall causes real problems. Many farmers have to re-sow their cotton seeds several times for their seedlings to become established. Irrigation farmers use groundwater and/or surface water, which, if not well managed or regulated, also depletes freshwater resources, particularly in water stressed regions, and can lead to water contamination from fertilizers and pesticide application. This can have significantly harmful effects on human health and biodiversity.	
Opportunity: *Since the cotton value chain is relatively well developed, with a central market outlet in the form of CMDT, as well as existing financing structures facilitated through collaboration between the CDMT, the National Agricultural Development Bank (BNDA) and the micro-finance institution (MFI) "Kafo Jigine", these can be leveraged for the introduction of irrigation systems.* The proposed scheme would involve several parties, an off-taking entity (CMDT), an input supplier, a local financial institution (BNDA or an MFI), and an impact investor. The cotton farmers, who would be organized under the off-taking entity, would receive in-kind inputs including irrigation systems from a pre-qualified input supplier. Prior to this, the pre-qualified input supplier would first receive payment from a local financial institution when a farmer's loan account for the inputs is generated. To cover some of the risk involved in lending to cotton smallholders, a loan guarantee scheme can be provided by an impact investor to the local financial institution. In the Malian cotton industry, partnerships with the CMDT could see such a model being applied whereby systems are installed in communities for trusted and loyal farmers, and farmer groups with financing from BNDA supported by loan guarantees provided by impact investors. *The financing scheme would need to be complemented with technical assistance for training and knowledge development for farmers on appropriate water management practices, especially in relation to fertilizer and pesticide use.* This would enable the development of more sustainable cotton production systems in Mali.	

Crop Livestock Integration

Value Chain: Livestock



Vehicle: Senior Debt

- Instruments: Short-term loan combined with technical assistance grants
- Value: Short-term loan – USD 0.25m to 2m and technical assistance grant – USD 50k to 100k

Problem:

Systems that combine crop (mainly millet, cowpea, sorghum, cotton, and groundnut) and livestock activities (cattle, sheep, goats, and camels) in different proportions are important for livelihoods across West Africa. Linkages between food crop value chains such as maize, millet, and rice, and livestock value chains have however remained under-developed. Improving the links between producers, processors and markets is essential to jointly improve the performance of both value chains.

Opportunity:

The livestock feed industry presents an important investment opportunity to enhance Mali's livestock production. The animal feed companies link smallholder crop farmers who supply the raw materials with the enterprises that rely on livestock. The proposed financing scheme would involve the provision of short-term working capital in the form of a revolving facility to animal feed producers as they increase the quantities of raw material that they source from smallholder feed crop farmers. As the livestock industry is significantly large in Mali, a large feed producing enterprise can work with its customers who own feedlots to supply the resulting waste (manure) back to its out-grower farmers. This would require a technical assistance a grant facility to enable the model to be tested and to also support the smallholder crop farmers under the out-grower scheme in taking up CSA practices.

Sustainable Rice Intensification (SRI)

Value Chain: Rice

Vehicle: Blended finance

- Instruments: Technical assistance and grant support facility combined with debt
- Value: Technical assistance grant – USD 50k to 250k and follow-on Debt investment – USD 0.5m to 5m

Problem:

Rice is one of the most widely cultivated food crops in Mali; nevertheless, it is also the most widely imported as local demand continues to outstrip local production of quality rice. This is linked to lower farm yields, lack of adequate production methods, and other post-harvest issues in Mali. Many farmers lack access to extension services and inputs for sustainable and quality rice production. The Malian rice value chain is also challenged with lack adequate water making rice production sensitive to climate change especially in the dry areas leading to reduced levels production. Finally, small scale producers in the Malian rice value are faced with challenges including equipment such as processing machines, tractors, as well as access to government subsidies and support from financial institutions.

Opportunity:

The value chain's potential for CSA investments is high, with earmarked projects such as the promotion of systems of rice intensification among producers to reduce the crop's sensitivity to climate change while increasing farm productivity. There is an opportunity to build on on-going interventions and to explore market-based models for accelerating the scaling of SRI innovations among farmers as a means to improve economic as well as nutritional outcomes. This can be explored through a partnership between investors, researchers, government, and local rice processors/aggregators. In this collaboration, an outgrower scheme in which participating farmers will receive premium rates for rice produce if the fields follow the SRI techniques. These techniques will be provided through training by extension agents as part of technical assistance. Purchase of rice produce at premium rates would be supported by a grant to enable farmers receive additional income for participation in the scheme. Participating rice processors would be assessed for prospective investment potential, in particular loans for their operational costs, and asset acquisition such as processing equipment and haulage vehicles. A key criterion for accessing these investments would be the maintenance of trade relationship with SRI practicing farmers and the promotion of SRI in rice sourcing activities. In this way, market demand creates a pull for the adoption SRI among farmers. Essentially, this opportunity requires a blended finance approach with multiple phases of project development and investment.

Senegal

Agriculture in Senegal

Agriculture lags the services and industrial sectors in Senegal, contributing approximately 16% to the country's GDP in 2020, while the other two sectors contributed about 49% and 23% respectively (O'Neill, 2020). In the same year, close to 32% of the country's labor force was employed in agriculture, with the majority living in rural areas (World Bank, 2021a). The sector is dominated by smallholder farmers who produce close to 70% of the country's total agricultural production. Credit to the agricultural sector has more than tripled from USD 35 million in 2009 to USD 110 million in 2019 (FAOSTAT, 2021). The sector has witnessed steady growth over the years, largely driven by the national government's support. In the years from 2004 to 2018, expenditure on food and agriculture by the Senegalese government witnessed a 9% nominal growth rate (Pernechele et al., 2021).

Senegal's location within the Sahel belt means that it experiences high temperatures and erratic rainfall, and that its soils are generally in poor condition. This has contributed to cases of acute food insecurity in the country, with 17% of the population facing this challenge in 2020. Consequently, the country relies on imports, especially from its neighboring countries, to meet 70% of its food needs. However, the sector still provides ample opportunity for growth and investment, especially with the demand for mechanized farming equipment, expanded irrigation systems, post-harvest handling systems, storage and silo facilities increasing.

Impact investment in Senegal's agriculture value chain

Though a less popular destination for impact investors in West Africa compared to its anglophone counterparts, Nigeria and Ghana, Senegal is attracting more and more impact investors such as BIO and EDFI-AgriFI, which are both Belgium based. This can partly be attributed to the recent period of political stability the country is experiencing. In 2020 it was ranked as the 10th most politically stable state in Africa, an improvement of 20 places from its 2010 ranking of 30. Senegal stands out in comparison to most other countries in the West Africa sub-region in terms of political stability. There has been no coup d'état in the country since it became independent in 1960. Although there was a low-level conflict in the Casamance region between the State and Movement of Democratic Forces of Casamance for several decades, this never escalated, and a ceasefire was agreed by most factions in 2021. Other criteria, such as the stability and formality of the value chain, established structures within the value chain, linkages to smallholders and cooperatives, among others, have also influenced the decision of impact investors to invest. In general, financiers prefer to work with organized entities such as cooperatives; their presence in a value chain is a great incentive attracting impact investors.

Inflation has been much lower than in other West African countries like Ghana and Nigeria at only 0.9% in 2019, rising to 1.9% in 2020 due to Covid-19's impact (BCEAO, 2020). Like Mali, Senegal's membership in the WAEMU provides significant protection from currency fluctuation and monetary instability. From 2005 to 2015, investors channeled over USD 550 million across the nation's multiple sectors (Thomas and Gizouli, 2020). The agricultural sector attracted investments worth USD 42 million from both DFIs and non-DFIs between 2005 and 2015 (Thomas and Gizouli, 2020). To gain perspective on the investment models and instruments utilized in the country's agricultural sector, Table 9A provides details on six investments by impact investors between 2016 and 2021 for which information was available.

Table 9A *Impact investments in Senegal from 2016 to 2021*

Value Chain	Investee	Investor	Investment Instrument	Amount	Value Chain Level Targeted
Horticulture	Le Lionceau	Teranga Capital in 2020	Equity (seed funding)	Undisclosed	Processing
Dairy	La Laiterie du Berger	BIO in 2017	Debt	$ 1,383,348	Processing
		BIO in 2019	Debt	$ 1,794,816	Processing
		AgriFI in 2020	Debt	$ 600,000	Production
	KOOD	Teranga Capital in 2019	Equity	Undisclosed	Processing
Cereals	SECAS (ex La Vivrière)	Teranga Capital in 2019	Equity	Undisclosed	Processing
Nuts	Lysa & Co	Teranga Capital in 2017	Equity	Undisclosed	Processing
Rice	Société Sénégalaise des Filières Alimentaires (SFA)	Grameen Credit Agricole Foundation in 2018	Debt	$ 113,000	Processing
	Coumba Nor Thiam (CNT)	Common Fund for Commodities in 2019	Debt	$ 1,459,800	Production & Processing
Maize	Société de Cultures Légumières (SCL)	BIO in 2016	Debt	$ 2,860,494	Production & Processing

Based on the findings in Table 9A, investors in Senegal's agricultural sector preferred both debt and equity. The four equity deals listed were transacted by Teranga capital, a private equity investor based in the country. The firm provides long term equity financing of up to 450,000 Euros to SMEs and start-ups with high growth potential. Of the three value chains listed, the dairy value chain received most of the disclosed investment capital, totaling approximately USD 3.8 million. Most investors preferred to deploy their capital to the processing level of the value chain, with only two deals incorporating an element of commodity production. One of the equity deals transacted by Teranga Capital was a seed fund provided to Le Lionceau, a Senegalese start up specialized in the production and marketing of smooth purée for children. It is common for most of the deals to be accompanied by a technical assistance facility; a case in point is the investment by The Common Fund for Commodities in Coumba Nor Thiam (CNT). The deal was supported by a technical assistance facility provided by AgDevCo aimed at addressing key rice production barriers through training in seed production techniques.

***Table 10A** Investment climate in Senegal*

Enablers	Barriers
• The political environment in Senegal evokes investor confidence due to a strong track record in stable governance. The country has not experienced any incidence of coup d'etat since independence in 1960. Compared to most countries in west Africa, such conditions boost Senegal's attractiveness for investment. • Senegal's currency, the CFA, limits the degree of currency volatility the country experiences in comparison to other countries in west Africa. Investor costs for currency hedging is reduced thereby. Inflation and cost fluctuations pose less of a challenge when investors consider the overall functioning and stability of a value chain of interest. • Various incentives have been established for investments in agriculture, agro-processing, fishing, livestock, and related industries such as three years' exemptions from taxes and custom duties.	• Institutional bureaucracies create challenges for investors seeking to harness incentive packages that the government has set up, e.g., delays in providing permits for duty free imports on agricultural equipment. • The challenge of child labor in various value chains such as livestock rearing, cotton, mango, peanut farming creates an extra burden on investor due diligence to avoid unethical investments. • Poor infrastructure in rural areas hinders internal and external accessibility and thereby affects the development of agribusinesses and effective value chain partnerships. This has an impact on the business case presented to investors. • Although the country has a sound financial environment, the sector itself is rather underdeveloped. This poses barriers for engaging financial institutions in investment transactions particularly in the complex area of agriculture. • Most value chains have remained informal. As such, there are very few organized structures. This makes access to finance and securing loans more difficult.

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Priority value chains for impact investment in Senegal

The shortlisted value chains in Senegal are groundnut/vegetables, cotton and rice, (see Table 11A).

Table 11A *Priority value chains selected in Senegal*

Criteria	Groundnut	Millet	Cotton	Rice	Potatoes	Onions	Maize	Sorghum
Level of business-to-business relationships and partnerships within the value chain (from producers to end consumers)								
Level of private and public partnership (PPP) interventions in the value chain (includes targeted government and NGO intervention programs in the value chain)								
Trends in commodity production and consumption/ demand								
Level of market development including market access by key value chain actors								
Level of export (dollar and or euro) income generated per commodity								
Level of climate smart interventions within the value chain								
Level of other important inclusivity indicators in the value chain								
Competitiveness of the value chain at the regional level (yields and pricing)								
Potential for smallholder impact								
Trends in impact investors' participation in the value chain								
Level of access to finance by key actors in the value chain. (Access to finance enhances value chain productivity								
Priority Crop	**Yes**	No	**Yes**	**Yes**	No	No	No	No

High Medium-High Medium Low-Medium Low

Groundnuts

Groundnut was introduced in Senegal in the 19th century and has since played a key role in agriculture and trade. The production of groundnut is dominated by smallholder farmers who intercrop it with other staples such as millet. Approximately 27% of households in Senegal grow the crop, with more than half of them being extremely poor households (Floyd, 2020). Groundnuts are the main source of income for 70% of people living in the groundnut basin and generate up to 35% of the revenue of each household. In 2019, groundnuts earned the country approximately USD 151 million in export revenue, the highest of all agricultural commodities, thus affirming its significance to the country's economic development (FAOSTAT, 2021).

The crop is, however, susceptible to climate change; in recent periods, its yields have begun to decline due to poor soil conditions and various climatic factors. This presents an opportunity for investment in high impact CSA initiatives, such as the introduction of high-quality drought tolerant seeds, which can improve yields by about 30% (CIAT and BFS/USAID, 2016).

Rice

Senegal is one of the largest consumers of rice in West Africa (Fofana et al., 2014). Consumer habits as well as increased population and urbanization has led to a significant increase in the demand for rice. In 2019, Senegal produced about 1.2 million tons of rice, representing slightly less than half of the local consumption annually (FAOSTAT, 2021). To meet demand, the country has resorted to importing rice, especially from Asia. Rice production in Senegal is almost entirely done by smallholder farmers (Colen et al., 2013). The quality of locally produced rice, however, remains a challenge, as it continues to be perceived to be of a lower quality in comparison to its foreign counterparts. The low quality is attributed to small scale millers, known as banabanas, who do not use moisture meters to check rice quality during purchasing and use very simple husking techniques.

Financing is often a challenge for producers since credit is not available from banks. Production contracts were introduced in 2010 to assure rice millers of the quality and quantity of paddy to expect from the producers. These contracts provide quick access to credit and inputs in comparison to relying on banks. Improving credit facilities available to farmers will require remodeling current financing options and the involvement of aggregators as intermediaries capable of providing financing. To enhance climate change adaptability, the system of rice intensification identified by the government and irrigated rice farming are some of the investable CSA initiatives earmarked to reduce GHG emissions and increase yield per hectare respectively (FAO, 2017).

Cotton

Cotton is one of Senegal's principal export crops. The country has been producing cotton since 1960 and has developed a unique structure. Senegal's production capacity is estimated to be about 60,000 tons per year (GIZ, 2021). Lack of basic social amenities plague households in the cotton producing region of Senegal. Primary level producer associations exist at the local level, represented by the National Federation of Cotton Farmers (Sène and Stads, 2011). Société de Développement et des Fibres Textiles (SODEFITEX), the largest cotton company in Senegal, also manages the processing and trade in cotton. SODEFITEX is a national public-private enterprise established in 1974 that collaborates with a Senegalese financial institution to offer some farmers inputs (cotton seeds and fertilizer) on credit and provides advice to farmers on how to improve cotton yield. After the harvest, SODEFITEX purchases the cotton at the farm level at a market price agreed upon before the planting season. After deducting a portion of the value of the harvested cotton to reimburse the input credit, SODEFITEX pays the remainder to the farmer (Stads and Sène, 2019).

Potential investment opportunities and models

The following tables focus on three promising value chain investment opportunities and summarize the challenges that must be overcome. While the cotton value chain has been prioritized, we present an investment opportunity in the mango value chain. The mango value chain in Senegal has seen increasing interest from private investors due to its export and processing potential.

Integrated Water Management Systems	
Value Chain: Groundnut, also vegetables 	**Vehicle: Blended finance** • Instrument: Loan loss guarantee combined with a technical assistance grant facility • Value: Loan loss guarantee – USD 0.25m to 2m and technical assistance - USD 50k to 150k
Problem: *Reliance on traditional flood irrigation techniques and tremendous fluctuations in annual precipitation has a severe impact on Senegalese groundnut producer performance.* To achieve self-sufficiency in groundnut production, smallholder farmers require improved access to irrigation systems, training, and investment in agricultural research and development activities.	
Opportunity: *The introduction of irrigation in groundnut producing communities can be significant.* Due to challenges with infrastructure and limited access to electricity in rural areas, solar irrigation pumps linked to boreholes are a potential solution. *Solar irrigation pumps could be provided on credit to small-scale vegetable and groundnut farmers under a cooperative in a four-way lending scheme involving a pump company, the cooperative, an off-taker and a financial institution.* Investor funds can be leveraged in various ways; (i) as a loan loss guarantee to secure the credit facility; and (ii) through channeling of impact funds via the financial institution to cover any deposits to be made by farmers for the pumps, after which pumps will be installed in the farms. This would enable a risk sharing mechanism to be developed with the financial institution. This second model would also allow farmers to avoid the initial upfront costs. Such investment structures would however have to be carefully designed to ensure clarity of roles and responsibilities in the scheme for all parties. As such a scheme is complex, grant funds or guarantees may be required to provide security for the investors involved. *The harvests from farmers would be received by the off-taker, which will in turn make payments on behalf of farmers as part of their obligated monthly loan instalments.* As part of this process, the cooperative and off-taker would deliver information on good and climate smart agricultural practices to further enhance farmer productivity.	

Processing Capacity Development

Value Chain: Mango

Vehicle: Private equity or venture capital financing

- Instrument: Equity
- Value: Equity investment – USD 0.25m to 1m

Problem:

Senegal is gradually becoming a mango producing hub in West Africa. Although there is great potential in the mango value chain, it is estimated that about 65% of the produce is lost to postharvest damages. This is due to fruit flies, infrastructural challenges, weakness of cold storage methods, and harvest management, among others. Also, currently less than 10% of the produce is processed.

Opportunity:

Mango exports have the potential to increase Senegal's foreign exchange earnings, thus helping reduce the country's trade deficit. Given the high level of post-harvest losses, processing mangoes offers an avenue through which earnings can be dramatically improved in the value chain. Mangos can be processed into puree, chunks, dried, or made into juices after harvest. This prolongs their shelf life and increases the ability of the demand side to absorb the produce.

Processing requires significant capital investments early on, hence the need investments by impact investors. These investments can be channeled into processing equipment such as cold storage facilities, driers, and pulping and refining equipment. Many SMEs operating within the mango space either as aggregators or processors may not be able to meet the investment ticket sizes preferred by large scale impact investors such as DFIs. For this reason, equity investors in the form of private equity firms of venture capitalists or the use of debt instruments could be well suited for such opportunities.

Rice Production and Processing Capacity Enhancement

Value Chain: Rice

Vehicle: Private equity/Senior debt

- Instruments: Refundable grant for technical assistance combined follow-on loan/quasi equity investments
- Value: Refundable technical assistance grant – USD 50k to 250k and follow-on Debt/Equity investment – USD 0.5m to 5m

Problem:

Many farmers lack access to extension services and inputs for sustainable rice production. Value chain actors such as processors have the potential to offer such services at the last mile. However, these actors often do not have the required resources or risk appetite to take on such activities. This results in low yields, hence low rice production and processing levels.

Opportunity:

Up to 70% of rice consumed in Senegal is imported, presenting a significant market for local producers and processors to take advantage of. Smallholders, with adequate support services, can improve rice production quality and quantities. Linking rice processors, who have business relations with producers, to impact investors can help facilitate the processors to play a role in achieving this goal. Processors can expand their extension services through the provision of refundable technical assistance grant facilities from impact investors. The extension services would in turn enhance producer agronomic practices which would in turn lead to improvements in production volumes and quality. Once this is achieved, the processors will require investments to improve their off-taking and processing capacities. This can be facilitated through follow-on debt or equity investments by the impact investors.

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APPENDIX 2: EXPECTED IMPACTS OF THE SURVEY INSTRUMENTS

Value Chain	Transaction	Targeted Impact
Barley	IFC and the GAFSP Private Sector Window investment in Soufflet Malt Ethiopia in 2019	To boost local malt sourcing by helping close to 40,000 smallholder farmers increase productivity, strengthening the country's agricultural supply chain.
	IFC co-funded by FMO, Rabobank, ING Bank investment in Habesha Breweries S.C. in 2019	The investment is expected to boost income for 15,000 smallholder barley farmers, double farm yields of participating barley producers and create 500 jobs.
Poultry	Finnfund investment in EthioChicken in 2016	Improving food and nutrition security and job creation, particularly for the youth.
	Finnfund investment in EthioChicken in 2021	Improving food and nutrition security and job creation, particularly for the youth.
Beef	Norfund investment in Verde Beef Processing PLC (VBP) in 2017	Create 1,600 jobs and support over 50,000 livelihoods.
Horticulture	Engineers Without Borders investment in Greenpath Food in 2017	To unlock more sustainable revenue generation for a growing smallholder network.
Mango	Moringa Fund investment in SOBEMA (Société des Boissons et Eaux minérales du Mali) in 2018	Creating the opportunity for farmers to further diversify their production and income. It will support the dissemination of agroforestry and sustainable land use practices as farmers will have a secured outlet for all their production.
	ABC Fund investment in Etablissement Yaffa & Freres (EYF) in 2021	To enable EYF to procure more volumes of mangos from the current 310 farmers and employ 200 seasonal workers on the packaging site. An additional 40 certified farmers will be expected to join the cooperative as a result.
	Oikocredit investment in Comafruits in 2021	To sustain a market outlet for farmers, who would otherwise see a big part of their production go to waste. It will also increase Comafruits' efficiency and export capacity.
	IFC investment in CEDIAM in 2021	Add up to 1,000 smallholder mango farmers to its already 2000-strong farmer supply chain. The funding will also support 300 direct and indirect jobs at CEDIAM.
Shea	IFC investment in Mali-Shi in 2019	The investment targets to increase incomes and market access for about 120,000 shea kernel producers in Mali, over 95 percent of whom are women.
	ABC Fund investment in Mali-Shi in 2021	Provide market access to nearly 100,000 collectors, over 95% of whom being women while also contributing to local employment as the company expects to create 34 additional jobs.
Horticulture	Teranga Capital investment in Le Lionceau in 2020	Creation and formalization of stable jobs, promotion of local raw materials and enhance fight against child malnutrition.

Value Chain	Transaction	Targeted Impact
Dairy	BIO investment in La Laiterie du Berger (LdB) in 2017	To enhance local economic growth, private sector consolidation/ innovation, and food security & rural development.
	BIO investment in La Laiterie du Berger (LdB) in 2019	Create jobs for 150 people (RT and Dakar combined) by 2022 and ensures a steady revenue to around 800 cattle breeders. The investment will also enhance the availability of food on the local market.
	AgriFI investment in La Laiterie du Berger (LdB) in 2020	Fostering the increased participation of farmers in the value chain. The project also contributes to food security, rural development, and local economic growth in the Sahelian region.
	Teranga Capital investment in KOOD in 2019	Implementation of an energy and waste management process. Formalization of existing jobs, recruitment of qualified managers and manpower, improvement of working conditions.
Cereals	Teranga Capital investment in SECAS (ex La Vivrière) in 2019	Promotion of local raw materials and jobs creation.
Nuts	Teranga Capital investment in Lysa & Co in 2017	10 new formal jobs created and promotion of artisanal and local processes and structuration of the value chain.
	Common Fund for Commodities investment in CNT in 2019	Increase in income for 3,250 farmers from EUR 786 to EUR 1,299 per year while creating 16 additional jobs created at CNT.
Maize	BIO investment in Société de Cultures Légumières (SCL) in 2016	To create approximately 1,500 new jobs (of which 232 permanent). Enhance positive flow of hard currency into the country and creates a positive, albeit small, effect on the country's hard currency reserves.

APPENDIX 3: LIST OF CONTACTS INTERVIEWED

Country	Name of Contact person	Position	Organization	Organization type
Ethiopia	Tekalgn Gudisaa	Country lead	2 Scale program	NGO/Project
	Tarekegn Garomsa	Raw materials development manager	Heineken	Private enterprise
	Shiferaw Tafesse	Senior Program Officer for Sustainable Land Use and Agriculture	Global Green Growth Institute	NGO
Senegal	Beye Mouhamadou	Manager	MSA	Private enterprise
	Aw Alassane	Country Director	Syngenta Foundation	NGO
Mali	Samuel Guindo	Country Director	Syngenta Foundation	NGO
	Abdoulaye Dia	Agriculture team lead	USAID FTF	NGO/Project
	Idrissa Guindo	Project Manager	ONG Helvetas Swiss Intercooperation	NGO
Sudan	Mohammed Yasir	Country specialist	MetaMeta	NGO
	Esmee Mulder	Program manager	MetaMeta	NGO
Cross-cutting	Loïc Badohoun	Investment manager	IDH Farmfit Fund	Impact Investor
	Yves Komaclo	Investment manager	Oikocredit	Impact Investor
	Peter Kamicha Kamau	Associate Investment Officer	IFC	Impact Investor
	Yosuke Kotsuji	Principal Investment Officer	IFC	Impact Investor

CGIAR
Sustainable
Finance

Financial Access

KINGDOM OF BELGIUM
Federal Public Service
Foreign Affairs,
Foreign Trade and
Development Cooperation

INITIATIVE ON
Climate Resilience